

Ministry of Education and Science of Ukraine
Sumy State University
Economic Research Centre
Youth NGO "ECO"

9th INTERNATIONAL STUDENT CONFERENCE

"Economics for Ecology"

ISCS'2002

*Sumy, Ukraine
May 9-14, 2002*



IX МІЖНАРОДНА СТУДЕНТСЬКА КОНФЕРЕНЦІЯ

"Економіка для екології"

*м. Суми, Україна
9-14 травня 2002 р.*

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9th INTERNATIONAL STUDENT
CONFERENCE
**"ECONOMICS FOR ECOLOGY"
(ISCS'2002)**

May 9-14, 2002, Sumy, Ukraine

The conference organisers: Sumy State University
Economic Research Centre
Sumy Regional Youth NGO "ECO"

The official sponsors: JSC "Sumykhimprom"
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The topics of the conference: theoretical problems, case studies, methodology, co-operation examples, environmental education, NGO activities and so on.

The conference is directed to: students, young researchers, representatives of youth organisations and NGOs

Conference language: the official conference language is **English**

Conference place: Sumy State University

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The Conference Organisers

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Sumy State University
(Department of Economics,
Department of Ecology)



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PRELIMINARY PROGRAMM

9th INTERNATIONAL STUDENT CONFERENCE
"ECONOMICS FOR ECOLOGY"
ISCS'2002
 May 9-14, 2002, Sumy, Ukraine

Thursday, 9

8.00 – 17.00	Registration of the participants (Sumy State University)
15.00 – 16.00	Sightseeing tour (Sumy downtown)
17.00	Departure from Sumy to the recreation center "Zoryanyy"
18.00 – 19.00	Accommodation
19.00 – 20.00	Dinner
20.30 – 23.00	Welcome party

Friday, 10

8.00 – 8.45	Breakfast
9.00	Departure to the Sumy State University
10.00 – 11.00	Opening ceremony
11.30 – 12.00	Coffee break
12.00 – 14.00	Plenary session
14.00 – 15.00	Lunch
15.00 – 17.45	Plenary session
18.00	Departure from the Sumy State University
19.00 – 20.00	Dinner
20.30 – 23.00	Ukrainian party

Saturday, 11

8.00 – 8.30	Breakfast
9.00 – 11.00	Workshops
11.00 – 11.30	Coffee break
11.30 – 14.00	Workshops
14.00 – 15.00	Lunch
15.00 – 17.30	Workshops
18.00 – 19.00	Football
19.00 – 20.00	Dinner
20.30 – 23.00	Foreigners party

Sunday, 12

8.00 – 8.30	Breakfast
9.00 – 11.00	Workshops
11.00 – 11.30	Coffee break
11.30 – 14.00	Round table debates
14.00 – 15.00	Lunch
15.00 – 17.00	Press-conference
17.00 – 19.00	Free time
19.00 – 20.00	Dinner
20.30 – 23.00	Camp-fire party

Monday, 13

6.30 – 7.00	Breakfast
7.00 – 20.00	Excursion
20.00 – 21.00	Dinner
21.00 – 23.00	Farewell party

Tuesday, 14

8.30 – 9.00	Breakfast
11.00	Departure to Sumy

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DEVELOPMENT THEORY AS APPLICATION TO SUSTAINABILITY OF THE HUMAN SOCIETY

Leonid Melnik, Dr., Prof., Sumy State University, Ukraine

Rio-conference aimed at preservation of bio-diversity as the strategic mankind's objective to achieve the sustainable development. What is the fundamental importance of the development of diversity systems in general and biological one in particular. Answering this question is the subject of investigation of the given article

The detailed analysis of the mechanisms and factors of the development we can introduce the scheme of their integral interaction. Its basic these are the following (Melnik, 2000):

1. Only *open stationary systems* are able to develop.

A system is considered to be *open* when it carries out the *metabolism* that is the material-energetic-informational exchange with the environment. Metabolism serves for the coming of free energy into a system and for the removing wastes from it.

A system is *stationary* when it is able to keep the *stable dynamic balance – homeostasis* which is represented by the difference of the physical, and chemical *potentials* (temperature, chemical, electro-magnetic, and others) between the separate parts of the system. A system can exist only keeping a definite value of homeostasis which can be in very narrow intervals of the given potentials.

In the system's parameters which determine the level of homeostasis diverge to one or another direction from the optimal values it can lead to the breach of the system's function or to the end of its existence as a self-developing system. To change the level of homeostasis it is necessary to rebuild the whole organism of the system, that is the radical change of the interaction of the separate parts of the system.

The *open stationary systems* are considered to be organism, ecosystems, social organization (firms, associations, markets, macro-economic systems).

2. To *sustain homeostasis* a system uses the mechanisms of the *negative feed-back*. These mechanisms are aimed at the compensation of the influence of the factors of the environment and they operate in the direction opposite to an influencing factor. To realize the mechanisms of negative feed-back a system is forced to spend the available free energy.

3. If the energetic balance of a system gets upset and the total expense of energy becomes more or less than the influx of free energy into the system, the lathers rebuilds itself changing the level of its homeostasis, raising or lowering if correspondingly. Of course if the system's elasticity is enough to make such rebuilding.

The change of the *level of homeostasis* and the rebuilding of the system's structure can be achieved by the help of the mechanisms of *positive feed-back*. They also demand the expenditures of free energy.

4. A system can *develop* due to the interaction of the three groups of factors: *variability, heredity, selection*.

Variability provides the appearance of the *accidental, indefinite* fluctuations, that is the deviations from the balanced state of the system.

Heredity ensures the conformity to natural laws of the current changes. It is determined by the cause and effect connections of the current processes. Due to this the future receives the quality "to depend upon the past".

Selection carries out selecting the most effective states that is the changes a system has to experience. *The criterion of selection* is the *minimization* of the system's *entropy*. It means that those states of a system are more likely to be chosen in which this system has a *maximal information character* that is the ability of the informational regulation on the processes. Finally, it leads to the *minimization of the irreversible dissipation of energy*. So, only the most effective states of a system can survive (can be selected).

5. The information fastening of the changes is a last link of the each cycle of the system's development. *The memory* of a system plays a leading role in this. The memory is the ability to *accumulate*, to *store* and *reproduce* the information. Actually new standards of the system's behavior are consolidated. Functioning means bringing into circulation of the system many times. So, the memory is the means of fixation of the most effective states of a system and their further improvement.

Human beings among all biological organisms do to their unexampled ability to accumulate and fasten the information created the most perfect mechanisms of existence and development of their own species. However it would be wrong to think that the informational status of any human made production system is higher (and the more effective and perfect) than any existing biological systems. Moreover, the efficiency of performance separate functions by human made production systems loose in many respects (often several degrees) comparing to animate nature. The human being had reached even the top if integration (peculiar generalization).

JSC "SUMYKHIMPROM" - STANDING FIRM

During its semi-centennial history Joint-Stock Company SUMYKHIMPROM changed its name and form of property several times, but its policy, directed towards advanced technologies, unique operating development and competitive products development, remained unchanged.

The largest in CIS and in Ukraine, our chemical and power complex is capable now to produce up to 50 items, which are competitive in Europe, Asia and America.

We go hand by hand with modern requirements and one step before our competitors. Therefore, we know exactly our needs and the ways to achieve our objectives. We face the future with optimism, as we have the needed trained and skilled staff potential. With its help we'll cope with any production challenge.

During last years our workaday routine is regulated by true objective: to develop and to implement production technologies and equipment for the sake of competitiveness on the world market, to maintain energy-saving and stock-saving policy and to create environmentally friendly production facilities.

Being the leading enterprise of Ukrainian economy in the sphere of phosphate fertilisers, which are used in agriculture, our company is in position to perform the

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JSC SUMYKHIMPROM was the first chemical enterprise to implement the energy-saving project within the TACIS program. It made possible to explore the stockpiles for energy utilisation efficiency and production cost reduction.

We were the first among chemical enterprises in CIS to come into North African raw material market of phosphate rock. It paved the way to our stable work in future. At the same time we develop and widen business contacts with neighbouring regions in Russia in the sphere of manufacturing and sales. By this means we recover our historically fixed sales market.

Together with successful execution of all the governmental orders in the field of phosphate fertilisers supply to Ukrainian agriculture, we regulate our direct relationships with certain Ukrainian regions and provinces to shorten the way from manufacturer to end user and to reduce the production self cost.

We highly appreciate our nowadays partners and associates and will be happy to cooperate with new ones for the sake of prosperity of Ukrainian economy and well-being of Ukrainian people.

GREEN MARKETING

Olga Alekseenko, Sumy State University, Ukraine

A new paradigm of green marketing is now in the making. Basic assumptions about how best to cater to consumer needs are in question. Successful green marketers no longer view consumers as individuals with insatiable appetites for material goods, but as human beings concerned about the condition of the world around them, how they themselves interact with the rest of nature, and cognizant of how material goods impact their lives positively as well as negatively, short term as well as long term.

Products are no longer designed in a linear "cradle-to-grave" fashion, with no regard for the long-term impact on society of their eventual disposal or no appreciation for the value of natural resources they represent. A "one-size-fits-all" system of nationally marketed brands now gives way to more flexible product offerings that best fit regional environmental considerations. Yesterday's resource-intensive products are being replaced by innovative products with radical new designs, even with "dematerialized services." These offerings are marketed with ads and promotions that derive added value from the educational messages they impart and the values they project.

The corporations that excel at green marketing are those that are pro-active in nature. Aiming to surpass minimal compliance standards, they define the rules by which they and their competitors will be judged. Ecologically responsive corporations consider themselves to be like nature's processes—interdependent. These corporations join with corporate environmental stakeholders in cooperative, positive alliances, and they work hand in hand with suppliers and retailers to manage envi-

ronmental issues throughout the value chain. Internally, cross-functional teams convene to find the best possible holistic solutions to environmental challenges. Long-term rather than short-term in their orientation, these companies manage with a double bottom line — one bottom line for profits, the other one reflecting their contribution to society.

Environmental marketing is more complex. It serves two key objectives:

- to develop products that balance consumers' needs for quality, performance, affordable pricing, and convenience with *environmental compatibility*, that is, minimal impact on the environment
- to project an image of high quality, including *environmental sensitivity*, relating to both a product's attributes and its manufacturer's track record for environmental achievement

CONSTRUCTION ON HARSH TERRAINS

Andrey Grechka, Crimean Academy of Environmental Protection and Resort Development, Ukraine

It is already no secret that Crimea, speaking in terms of tourism, is in the middle of construction boom. Construction is being held everywhere: mountains, steppe, sea shore and even on a sea.

For some reason the most attractive region for tourists is the South Coast of our peninsula. But this is also the shortest piece of Crimean land. Mountains make it a very harsh area for construction. An extremely narrow line of the shore suitable for conventional construction is either already overloaded with structures or destined for beaches. As a result we have an extreme shortage of land on the backgrounds of growing demand for hospitality services.

So the question arises: **How to satisfy the growing demand for accommodation and not to touch areas fated to be our preserves (so called *wild nature corners*)?**

One of the solutions may be construction on harsh terrains.

Harsh terrains (sometimes also called bad lands) in Crimea include:

- *hilly and mountainous terrains*,
- *ravines*,
- *rocky slopes and*
- *shelves*.

The most highly exploited are *hilly and mountainous terrains*. A lot of hotels, sanatoriums etc. are already constructed there. We have a hundreds of architectural solutions for these areas. They not only preserve precious land but also are also very attractive and to some degree exotic structures, which satisfy different esthetic tastes.

The second-often-used are *rocky slopes*. These mostly satisfy needs of Crimean wineries. For example Crimean champagne plant *Novy Svet* has many of its facilities in caves.

Crimean bar industry uses *shelves* to some degree. Shelves are, actually, very attractive cites for accommodation facilities, but now they are being used to accommodate bars only. However this is a very prospective and undeveloped area.

The last and the least explored are *ravines*. To the east from the town of Alushta there are kilometers of land covered with *a/m* ravines. You will not see any structure within your eyesight there, only tents and cars. However this territory, if handled properly, is absolutely suitable for construction.

As a résumé: construction on harsh terrains may solve one important problem for Crimea: scarce territory in the most tourism attractive areas, and as a consequence keep our natural preserves untouched.

THE COMPONENTS OF FOREST FUND PROPERTY RIGHTS

Vita Andryeyeva, Sumy State University, Ukraine

Property rights may define who has legal use of such resources but they are only as valuable as the attributes that go with them. Consider some land that you wish to use to raise seedlings. The value of that land to you is equal to the profit you will get from the sale of those seedlings now and in the future. However, if you are unable to exclude the neighbor's sheep from getting in and eating the seedlings, the property is of no value to you for growing seedlings. Another example may be a license you hold for the right to exclusive use of a parking lot. Although you make a substantial sum of money parking cars, the tax rate is so high on the revenue generated that the value of the license is rendered nil and so too, the transferability of the license.

Property rights are one of the most important concepts to understand in the use of all types of resources. The rights people have will define how a resource is used, who gets to enjoy benefits and who is responsible for care and maintenance. The reason they work is because they are based on incentives which, provide people with motives or reasons for behaving in a certain way.

Property rights are composed of several components - exclusivity and open access, duration, transferability, benefits conferred, enforceability - and it should be noted that each component can be crucially important, for without them property rights would have little meaning.

DEVELOPMENT OF METALLURGICAL TECHNOLOGY FOR ENERGY AND SOURCES SAVE

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The theme of energy and sources save is actual because at present there is a deficiency of high quality scrap for electric arc furnaces and electric energy is still too high.

The metallic scrap, which is used in most metallurgical plants, is contaminated with non-ferrous impurities such as nickel, copper, plumbum, zinc etc. To improve the quality much effort must be done and eventually some quantity of impurities will remain in scrap. Some of plants separate the scrap, but to organize this process is too costly and difficult. Another decision is to dilute a contaminated charge by reduced iron ore materials (Direct Reduced Iron, Hot Briquetted Iron, sponge iron). But the usage of this materials leads to the increase of finale product cost due to rising of specific electrical consumption.

Usually a DRI charge is fed through additional hole in a roof of furnace. During this operation a correlation of material speed and input thermal energy must be provided.

There is no decision concerning charging of a reduced materials as heating and smelting occur in the working space of electric arc furnace. The charging is carried out without pre-heating and the usage of heat of hot outgoing gases. The problem of interacting of reduced iron with hot gases is not solved sufficiently. Presence of oxidizers in working gases may decrease the efficiency of a process and yield.

We are going to solve the follow scope of problems. In particularly we have to study the physical-chemical processes of pre-heating of DRI and to offer technological schemes of new technology.

At the present stage of work there is a laboratory furnace. The capacity is 200 kg. Some melts have been made with different kinds of roof chambers. This work was done for modeling of gas passage through materials. The samples of pellets both green and reduced were checked and studied. Preliminary results are follow:

- 1) there is a principal possibility to use the heat of outgoing gases;
- 2) during right organization of a process of heating the reduction process is possible too;
- 3) reducing of energy is observed.

From economical point of view there are some profits:

- 1) saving of specific electrical energy is 120 kWh [5,60];
- 2) primary filtering of outgoing gases in a layer of pellets;
- 3) uniform distribution of charge in a working space of electric furnace;
- 4) saving of physical heat energy due to decreasing of times when a furnace is opened;
- 5) usage of reducing potential of outgoing gases in some periods of melt;
- 6) usage of cheap laden iron sludge, non-coke coals.

One of the main goal is researching of physical-chemical reactions between furnace's gases and reduced and/or green pellets, or iron materials.

ECONOMIC ECOLOGICAL ANALYSIS OF THE INVESTMENT PROJECT

Olga Katan, Dniepropetrovsk National University, Ukraine

The policy of Ukrainian government has been directed to solve the economic and social problems: increasing gross internal product, stabilization of national monetary unit, improving of common weal etc. last ten years. The tendency of ecologisation in all spheres of activity for the last years in Ukraine takes place. The government sensed own responsibility for necessity of ecological problems' decision and improving the environmental position in the country. Above all this tendency in the attempts of the development the mechanism of effective natural using was shown, it based on the project of Sustainable development conception of Ukraine. The important direction of Ukrainian state policy is the prevention of damage to the environment or its decreasing to some conceivable level without drop in development tempos of each separate enterprise, planning and economic stimulation of environmental activity Ukrainian enterprises.

The main environment pollutant is the industrial enterprises, which do the huge damage to environment and use irrationally the natural resources in their production activity. Government developed the mechanism of industrial enterprises' production activity regulation on environment protection from impact and ineffective using of natural resources, which provides with using of economic and political instruments.

It is necessary to develop a span-new thinking method of environmental protection. The enterprise leadership should search new ways for ecological problem solutions and improving the management systems of environment.

The ecological problem solutions are connected with the ecological management's application. The Ecological management is the aggregate of purposes, methods and directions, its using can help to enterprise to improve the consideration of ecological problem in its productive activity. The economic theoretical foundations of ecological management are based on the principles of minimization of productive outlays and maximization of business price and improvement of informational ensuring for the leadership.

The enterprise should plan the economic ecological analysis of the investment project. This analysis will help to consider what innovations should be realized, they will be effective from the standpoint of the benefits and new productions and from the standpoint of the social benefits, decreasing the impact to the environment and improving the ecological situation also. The economic ecological analysis is the necessary element of investment projection. It occupies special place of decision-making. The aim of investment project should be a balanced solution of the problems of the enterprise and ecological problems in the region, and as a result it would

be the social problem solution: improving of production quality and ecological situation (and rising the population and workers health also).

Thus, the Ukrainian industrial enterprises have to consider the ecological factors with the purpose of decreasing (prevention) the impacts to the environment in their development and realization the investment projects in the present conditions. But for this time we have the weak economic-ecological mechanism that regulates the investment processes in Ukraine.

THE THREE R: REUSE, RECYCLE, RECOVER

Itawi Ahmad, Dokuz Eylul University, Turkey

First of all it gives me great pleasure and honour to take advantage of the opportunity to be a candidate participant in this festival.

I attended international student festivals in Norway, Germany, Hungary, Australia and Holland, so that I know the importance of these meetings. In my view in these festivals like your festival, people can meet from different countries, religions and ethnics, so they create new ways and new ideas for their future, that might be an essential basic solution in order to solve international problems. So that I believe this international contact at such festivals will play an important role in all fields of life, and will also encourage people from all nationalities, ethnics and religions to overcome problems that face our world, in other words these meetings may give birth of a permanent, useful and powerful stability between nations and also to make new friends and to exchange ideas and views.

I believe that, all these themes are important, but As an environmental engineering candidate, I think environmental education is the best topic for me; however there are many reasons that persuade me to choose this topic. We see that, our world faces a lot of serious problems resulted from the CAPut¹ century, where the first industries were found, and natural resources were consumed haphazard, and at the end of this irresponsible behaviours, the danger that menaces the life on the earth, had appeared. For this principal cause, we have to discover new and clean technologies, and to use renewable resources. (The three R reuse, recycle, recover).

I'm sure that, with the help of experts and skilful people at your university, we will be provided with necessary, new ideas and creative ways, that might be an essential basic solution in order to stop and later to end this problem. It may be difficult but never impossible. It's a good thing to share ideas and experiences to reach a better environmentally friendly behaviour in order to protect our Nature, maintain its eco-systems, and sustain a healthy living for all creatures on earth especially Humans.

In conclusion, I am sure these festivals will be a mirror that reflects the real problems of the world and persuades governments and other international funds to find solutions for their problems.

WASTE MINIMIZATION IN FINLAND

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Modern cities and towns produce a lot of waste. And in most cases, very little of the waste produced is recovered or recycled. The technology for sustainable treatment of waste exists and has been successfully used for 9 years in a small town in Finland.

Vaasa is a pleasant town of 55 000 inhabitants, located on Finland's west coast. However, in the mid-1980s, Vaasa was confronted with a major environmental problem. The town's landfill (which received the majority of municipal waste) was rapidly running out of space and there was no suitable site on which to construct a replacement facility. The landfill belonging to the neighboring town of Mustasaari was also running out of space. As a result, the two communities decided to develop an advanced waste treatment system.

The goal originally set for the new treatment system was to reduce the quantity of waste disposed in landfills by 70%. This was to be achieved by six methods:

- Sorting of waste
- Achieving high recovery of metals, furniture and other recyclable goods
- Using biodegradable waste to produce biogas and humus (soil)
- Using biogas produced as fuel in electricity generation
- Using humus produced in park maintenance
- Burning combustible waste to produce electricity

Reducing the amount of waste sent to landfills requires fairly good separation of different types of waste. Over 90% of the population sorted their waste correctly, and some 80% expressed positive comments about the sorting process.

The heart of the Vaasa project, the Stormossen waste treatment plant, began operation in 1991. The plant receives waste from Vassa, Mustasaari, and the Ekorosk waste company. In total the plant receives biodegradable domestic waste from 130 000 people.

In 1996, the Pietarsaari pellet plant was put into operation to handle waste that is not treated at Stormossen. The plant now handles all of Vaasa's burnable waste (paper, cardboard etc), processing it into small pellets, which using as a fuel.

The changes in Vaasa since the mid-1980s have resulted in a near-sustainable waste-treatment system. By 1997, over 90% of household waste was recycled or burnt, with just 9.5% sent to the town's new, smaller landfill.

Each 1000kg of household waste is now treated as follows:

- 450 kg processed into pellets and burnt in the local paper mill (producing 2400kWh energy and 45kg of ashes for disposal)
- 450 kg treated at Stormossen biological plant (producing 200kg of high-quality soil and 450kWh of electricity from biogas)
- 50kg ferrous metals for recycling
- 50 kg of waste for disposal

The 'Vaasa Project' has showed that waste treatment can be much more sustainable than it is in the majority of the developed world. The project was completed with little government support (the Finnish government contributed just 20% to the cost of the developments). Nine years of operation the plant has proved to be an economic success and CITEC (the company responsible for developing the Stormossen plant) has installed similar systems in several other European countries.

ENERGY CONSERVATION IN ADMINISTRATIVE BUILDINGS: ECONOMIC AND ENVIRONMENTAL ASPECTS

Yuliya Vystavna, Kharkiv State Academy of Municipal Economy, Ukraine

Energy is one of the building blocks of modern society. It pervades all sectors – economics, labor, environment, international relations in addition to our personal lives – housing, food, transportation, recreation and more. Understanding energy means understanding resources and their limitation as well as the environmental consequences of their use. Energy and environment and also economic development are closely linked. And the inefficient use of energy causes many economic and environmental problems. Only using energy and resources in an appropriate efficient way would avoid most of these problems.

Energy consumption depends on two factors:

- Intensity (efficiency) of use
- Level of activity

Efforts of energy conservation usually concentrate on these factors.

Administrative and office buildings are one of the most powerful energy consumers in the non-industrial sphere. In such buildings is used more than 15% of energy resources in Ukraine. And all of these buildings have points through which heat, electricity and water are lost without being noticed and prevent. Energy auditing is the main solution of the problems; it is help not only save money, but also save environment.

The first step of the energy audit is to examine the heat, electricity and water consumption in the building. Excessive consumption of energy is determined and the report of the audit presents economically feasible energy conservation measures. One third of the saving can be made completely without investments and payback period of any necessary investments varies from less than one to three years.

Such work has been done in the Kharkiv Institute "Energoproject". After elucidating the consumption of energy and resources it was proposed the different energy efficient measures: change the type of the lighting sources, reduce losses of the heat through links in windows, doors and etc. Due to such measures the consumption of the electricity was reduced on 45%, the heat consumption on 60% and water on 28%.

A profitable blending of efficient energy and resources use with safe, sustainable sources to provide the same or better services while saving money, abating pollution

and climate change, reducing the threat of nuclear proliferation and increasing global security.

THE MODERN TOURIST AS AN ENVIRONMENT CONSUMER. POSSIBLE ALTERNATIVES

Culeac Petru, Academy of Economic Studies of Moldova, Moldova

One of the terms that characterize very well the modern humans is that of consumer. From the oldest times people consumed only what was strictly necessary for their survival. That term consumer evolved to what is understood today in economic terms: consumer - the person that pays money for different merchandizes in order to satisfy certain needs. These needs have been classified by Abraham Maslow are of different importance, so that when the lower level needs are satisfied the consumer seeks to satisfy the higher level needs. With the rise of the companies' number, the diversification of their activity areas, and more recently their enlargement to the global level, more attention is paid to the individual in his quality of consumer. Depending on the consumption object there are industrial products consumers, electrical appliances consumers, fine art and music consumers, and finally the consumers of services. In most of the business areas, enterprises base their activity on selling to the consumers different products or services made by the humans. Exception is made by the coal, oil, lumber and gas industries that extract and sell the natural resources. From this viewpoint the tourism industry is similar to those of coal, oil, gas, etc. It is wide accepted the idea that the tourist companies are selling services. At a thorough glance we realize that in fact they sell the natural resources, they sell the environment that is consumed by the tourists. The consumption is defined as a total or partial destruction of the consumed object. The tourists consume the environment in the very direct sense of the word. The situation is not fair. When we go to a shop and buy some product, we reward the producer by paying the asked price that includes the *production cost + the profit + the commission* of the salesman. When we go to a tourist agency (the salesman) we just pay them with a 'commission' for the mediation services offered. Who will pay the *production cost* and *the profit* for the consumed environment that the nature has produced? Very few are thinking of paying the nature for the caused damages. The nature is continuously destroyed and polluted. This may be a result of the accelerated growth of the tourism industry without taking into account the protection of the environment. With the development of that business branch, large masses of people that roam from one place to another in order to see and visit as many places as possible, became typical for the tourism industry.

The problem that that I wanted to analyze in my paper is not the causes of the continuous destruction of the environment, but the possibility of finding certain solutions of the ecological problems caused by the economic agents especially by the tourism business. Which is the future of the tourism and especially the tourism destinations? Is it possible that in some time, the tourists will no longer have what to

visit? If until now the economic agents exploited the environment destroying it, how could they now improve the situation? These are several questions that I have asked myself, and tried to answer in this paper.

It has to be emphasized firstly *the need for mentality changes*, at the state level at the level of economic agents as well as ordinary tourists. It is needed a change of the very meaning of the term tourism. The purpose of the tourism has not to be only visiting the famous world places and resting on the beaches together with another thousands of people. That situation is of course favorable for the tourism agencies that exploit these objectives but not for the objectives themselves that are destroyed by the large crowds of tourists. A solution may be the promotion of alternative forms of tourism. It has to be developed a strategy of identification of the new tourism possibilities, it is needed a special program for promoting the tourism combined with the protection of the environment - the ecotourism. An important role in the environmental protection has to be played by the state together with the economic agents, because only the civil society's ecological organizations do not have enough power to ensure a high quality of the environment protection.

An alternative of reducing the agglomeration of the tourist traditional destinations could be such new branches of the tourism as rural tourism, agrotourism, biotourism, etc. Rural tourism is an important segment and may have good perspectives especially in countries with no natural attractions, without seaside, high mountains rainforest or herds of exotic animals. Attractive cultural landscapes with small villages, rivers and lakes, combined with the traditional hospitality, are able to offer pleasant experiences to the tourists who look for relaxation and recreation in a calm setting. By promoting such kind of tourism these countries may get a chance for sustainable development of the countryside. In the framework of the rural tourism it is possible to organize special ecological expeditions during which the tourists would contribute themselves to the environment amelioration, thus compensating the damages they might have provoked. Such expeditions should comprise different greening campaigns, supported both by the state and the tourism agencies.

The result of such changes may be the reduction of the tourist 'invasion' of the famous places, the improvement of the environment condition and the development of the ecological forms of tourism. But still, the most important result of such changes should be the environment improvement as a result of the tourism.

CONSIDERING SUSTAINABLE DEVELOPMENT WHEN IMPLEMENTING TOTAL QUALITY MANAGEMENT (TQM)

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This paper describes the processes that take place when integrating sustainable development into existing TQM system of the firm. The paper is based upon the implications of sustainable development described in landmark 1987 United Nations report entitled 'Our Common Future'.

Business through local and international trade has a profound impact on the ability of a market culture to provide basic human needs and other goods and services. Therefore, commerce and how it conducts itself internally and interacts with its operating environment is closely parallel the objectives for managing towards sustainable development. [1] So that each aspect of business decision making should consider the affect that any action will have on improving or degrading the quality of life, now or in the future.

The ability of a business to responsibly conceptualize, plan, manage and control the activities in relationship to the present and future environment should be a fundamental concept in providing Quality Management. Various definition of TQM has included corporate responsibility to the environment. However, this subject is usually handled as a very distant tangent, with preference given to the more direct relationship of TQM as applied to economic profitability.

TQM is a management philosophy that supports the process of continuous improvement within an organization and where totally focusing on customer needs and expectations. In the socioeconomic viewpoint, TQM defines the customer as all members of the society and facets of environment that interact with the activities of the company.

TQM includes such characteristics as decentralized management which allows shareholders their autonomy to solve problems and contribute to the decision making process. It also provides for a more meaningful methodology applied to measuring current indexes of quality on all factors concerning a business (These characteristics correlate well with the recommendations made in 'Our Common Future' for managing industry towards sustainable development). [2,3]

Stephen Robbins in his textbook, Management, has pointed out that TQM is becoming competitive factor that is used by companies to differentiate themselves from competition. [5] A company that integrates sustainable development within its TQM management processes could set itself apart from competition, and perhaps force its competition to include sustainable development within their own operational consideration as well, thereby benefiting society as whole. This trend should also reduce the demand from society to government for mandates controlling business practices. [4] Due to this the methodology of TQM should reduce the risks associated with the administration of socioeconomic policy and provide a way to achieving the goals of sustainable development.

V. Daniel Hunt in his very through investigation of Quality Management entitled 'Quality Management for Government' has proposed that TQM will become a way of life for proper organizational management.[4] If it is true then sustainable development policy should begin to augment within business organizations. The very nature of TQM and how it is implemented inquires sustainable development policy consideration. If it's not considered then QM for that firm will likely fail, and it will probably loose its competitive advantage.

The major steps in the implementation of TQM are similar to processes for implementing sustainable development mentioned in 'Our Common Future'. [3] They are:

- 1) the process of gathering information to define the goals, time line for achieving the company objectives for sustainable development;
- 2) cooperation between public and private sectors of companies activities;
- 3) reorganization of management structure considering ecological impacts while evaluating trade, economic, energy, and other factors related to business operations by establishing at least one quality circle management team and remembering to include someone who represents the interests of societal shareholders;
- 4) multiple levels training and education on the topic of sustainable development in relationship to socioeconomic policies;
- 5) and evaluation of companies activities in terms of ecological impacts, success and failures of its policy and evaluation of potential reorganization strategies for increased ecological consideration.

These are shortly the selected processes for integrating the techniques of TQM with the concepts of sustainable development as applied to socioeconomic policy.

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SOME METHODOLOGICAL ASPECTS OF RELATIONS BETWEEN ENVIRONMENTAL AND TRADE POLICIES

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Trade and environment have been a front-page issue for most of last ages. Both popular and professional publications have offered lessons about how policies should be modified to harmonize both sets of objectives.

This problem provides an overview of recent research on the interactions between environmental and trade policies. It describes how the assumptions of these models can be important to be conclusions derived on the gains from coordination. The Harrison-Rotherford-Wooton CGE model of the European Union is used to illustrate the importance of these issues. It incorporates local and transboundary externalities. This model was extended to include three air pollutants and their health effects as non-separable influences on company preferences in each region described

by the model. The results suggest that the conventional assumption of separability in preferences between marketed and non-marketed goods is central to conclusions about the importance of coordination of these policies. The model links the pollutants to production in the relevant sectors of each country; incorporates a simple diffusion system for the transboundary pollutant; and introduces the morbidity-related health effects from air pollution as non-separable effects on preferences. Mortality impacts are treated as separable effects on individual well-being. The amendments were made to incorporate current estimates of health damage? Both morbidity and mortality from air pollutants. The design also permits an evaluation of the implications of:

- (a) omitting the environment from evaluations of changes in trade policy;
- (b) ignoring the joint effects of local and transboundary pollutants;
- (c) restricting preferences to be separable in environmental resources.

According to the results of the research we understood that domestic environmental regulations will either increase or decrease the international competitiveness of the products traded by the country undertaking them. By contrast, removing trade barriers will either improve or reduce the level of well-being of the typical company in the country reducing trade barriers. Finally, it seems likely research currently under way will soon establish that efforts to link trade and environmental policies will either enhance or degrade the current levels of well-being experienced in developed economies from the levels reached using the current independent approaches to these problems.

A MACROECONOMIC MODEL OF A DEVELOPING COUNTRY ENDOWED WITH A NATURAL RESOURCE

Yuriy Bezpalyy, Sumy State University, Ukraine

This short-run macroeconomic model analyses the effects of natural resource endowment, and policies designed to cope with the associated winner's curse. The effects on the economy are dichotomized along the lines of Latin America/East Asia; or alternatively, the point-source/diffuse natural resource delineation propose, see the table below. These two sets of differences are not mutually exclusive and can often be paired to form an analytical correspondence. Then it will be possible to potentially possess two distinct cases and sets of results; one reflecting the Latin America (point-sourced stylization, and the other the East Asia (resource endowed diffused) case.

The first two analytical results correspond to resource booms and capital inflows. It should be remembered that a resource boom could be caused by a variety of reasons: natural resource discoveries increases in the prices of staple exportables, worker remittances and other forms of transfers, A major innovation of my analytical model is that resource booms do not automatically cause the traded sector to contract and the non-traded sector to expand. This is partially a result of the existence of excess capacity in the economy. But relative parameter sizes do matter.

Under East Asian (diffused) conditions of a high propensity to consume the domestically produced traded good, M this sector could expand. Also, both the traded and non-traded sectors could contract. The effect of an expansion in the money supply induced by capital inflows is to expand the economy.

SUMMARY OF ANALYTICAL RESULTS

TYPE	RESOURCE BOOM	RISE IN MONEY SUPPLY	DEVALUATION	INDUSTRIAL POLICY (for M against N)
Latin America/ Point Sourced	M falls, N rises, or, both decline	Both sectors expand, N by more	N contracts. M may also fall	May work
East Asia/Diffused Resource En-	Both rise; or, M rises, N falls	Both sectors expand, N by more	Both M and N expand	Works unambiguously
East Asia/Diffused No Resources	NA.	Both sectors expand, N by more	Both M and N expand	Works unambiguously

The second pair of comparative static exercises is concerned with policies to tackle resource booms. In a certain sense, devaluation is the opposite of a resource boom, and may be a policy initiated to avoid the adverse effects of resource booms. There is the possibility of contractionary devaluation, particularly for the non-traded sector. This likelihood is strongly associated with Latin American or point-sourced characteristics. When devaluation is expansionary, it is so because the non-traded sector is less important to domestic consumers and there is a sharp reduction in imported consumer goods. These are more likely in the East Asian or diffused case.

A policy to tax non-traded goods consumption will be akin to industrial policy favouring the production of traded goods. Without a critical mass of consumer goods geared to the domestic consumption of labour-intensive traded manufactures, industrial policies of this type would be rendered meaningless.

In considering further extensions to the model, one would want to extend the short-run flow equilibrium analysis above into more dynamic stock-flow equilibrium. Incorporating a role for human capital would also be crucial, as this factor plays an important role in the development of the more dynamic manufacturing sector. Human capital accumulation only takes place as a result of manufacturing production, the counterpart of the M sector in my model. It takes the form of a production externality in the context of perfect competition, and there is no cost involved. A proper formulation of human capital accumulation would take into account the public goods aspect, as well as firm-specific features of this process. Other extensions would involve very different game-theoretic models of endogenous policy formation and rent seeking.

A further analytical refinement would be to augment the role of human capital with the innovation-imitation notions of brand creation under monopolistic competition of the type. This paradigm, when contrasted to a purely human-capital approach, can offer richer insights, as it points to the importance of infrastructure, institutions, social capital and the ability to adapt to a changing environment. These factors, of course, are the product of the non-traded sector, therefore, that side of the economy may have a positive part to play after all.

A remaining question is why had some natural resource rich economies such as the USA, Canada and Australia, and New Zealand done well in the past in terms of growth and eventual industrialization. Perhaps, resource abundance had a greater complementarity with growth and manufacturing development a century ago.

Low incomes and poor long-term growth rates are ultimately the result of an un-diversified production structure, and the inability to adapt to change. Policies matter, and these often need to be adapted to the size of the economy. The right policy mix includes macroeconomic stability, openness (as it promotes competitiveness), as well as the accumulation of human, institutional and social capital. Here, issues of political economy, which determine policy, can be quite crucial. Also, one can never discount the value of the appropriate timing of policy changes, which are often the product of pure chance.

GENERAL PRINCIPLES of AGROINDUSTRIAL ECOLOGIZATION

Olha Boychenko, The scientific chief: Professor, Dr. of Economics, Eugenie Mishenin, Sumy National Agrarian University

Within the last decades the downward tendency of cultivated grounds is observed in most developed countries of the world, while the demand on the main agricultural products is constantly increasing. It is certainly positive tendency for Ukraine: appears a possibility of useful increase in agricultural products exporting, improving of a payment balance, supplement of the state budget and prosperity of the exporting companies. In late 90-th they even financed the additional crops of sunflower - one of few profitable businesses in Ukrainian agriculture. The areas of sunflower fields in Ukraine have already exceeded optimum on 52% in 1998 and keep extending.

Harm produced by agricultural invasion in the environment requires the immediate revision of the existing concepts of a land usage. The stable economic development in long-term period is impossible without production ecologization. Large cattle breeding complexes and nonrational extensive agriculture produces disastrous pressure upon the environment and its harm simply shocks. For the last 30 years the area of eroded soils has increased in 1,5 times; in 90-th the loss of humus in soil exceeded the same in 1980 in 3-4 times. Only one of ten hectares of productive grounds has a normal ecological condition. The contribution of agriculture in destroying the environment makes 35-40%.

Nevertheless, under our judgment, it is impossible to realize an overcoming as of ecological, and an economic crisis in isolation one from another. The realization of long-term purposeful state policy directed on installation of ecology-economic stability is a necessity. This can include:

- Perfecting of the ecological legislation and the mechanism of its execution;
- Installation of measures of the punishment appropriate to a caused harm;
- Reduction of taxes paid by the enterprises which use environment friendly technologies and invest money in preserving the nature;
- Perfecting of a system of ecological examinations and valuations, inducing the introduction of technologies that save up the resources of nature.

All this will considerably reduce human pressure upon the environment, and in the end, the efficiency of nature saving programs somewhat defines the perspective of a nation and state prosperity.

ECOLOGY AND ECONOMICAL GLOBALIZATION PROCESS

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Today globalization is one of the component parts of the world developed countries development process. Practically all the economically developed countries are involved in the economical globalization process. In this connection, next question became urgent: how and in which way relations between economy and ecology will change. To my mind, differentiation of such globalization conceptions as: economical globalization, social (cultural), scientific (including ecological) globalization etc. is rather important.

Economical globalization means a process of national economies and national agents of management integration into united world economy.

Ecological globalization means a process of integration, co-operation and joint energies to achieve "sustainable development" purpose.

In my opinion, in today's understanding of this process, economical and ecological globalization tasks differ in many aspects, are opposite and uncoordinated. Even today, taking as an example TNC (as one of the most striking example of the economical globalization), we can say that in their overwhelming majority they don't ready for (main thing is they don't aim and are disinterested) implantation of the environmental friendly technologies. Such organizations as "Green Peace" have a lot of problems and conflicts exactly with such companies.

As creators of the theory and of the economical globalization process say, not all countries will get in a circle of countries that take part in the economical integration process (but only countries suitable to certain strict requirements).

This means, that the world will be divided, what, naturally, in no way will not promote ecological process of globalization, where participation even of small countries or with instability economical system is very important (because often probability of man-caused catastrophes in such countries is higher). Today we have

bring into accord the economical and ecological globalization processes, and that's more in favor of the first.

NEW WAYS AND RESEARCHES IN FINDING ENERGY

Tatyana Dudka, Sumy State Pedagogical University

Economy and Ecology are two things, closely connected and interacted. For these two things are the opposite points of one cycle. Because Economy is what mainly influences Ecology, and Ecology does the same for Economy. Nowadays, when we are coming to the highest points of the development of Economy and science, we are reaching ecological catastrophe.

Solar energy probably will be the foundation of a sustainable energy Economy, because sunlight is the most abundant renewable energy resource. Also, solar energy can be harnessed in an almost infinite variety of ways – from simple solar cookers now used in parts of India to gleaming solar collectors on rooftops in Beverly Hills.

Wind power could provide many countries with 1/5 or more of their electricity. Some of the most promising areas for wind energy are in North Africa, the Western plains of the United States, and the trade wind belt around the tropics – including the Caribbean, Central America, and Southeast Asia. In Europe, the largest wind farms will likely be placed on offshore platforms in the turbulent North and Baltic seas.

Hydrogen is an almost completely clean-burning gas that can be used in place of petroleum, coal or natural gas. It releases none of the carbon that leads to global warming. And it can be produced easily by running an electric current through water in a process known as electrolysis.

Hydrogen can be transported almost any distance with virtually no energy loss. Over distances greater than 400 miles, it costs about 1/4 as much as sending electricity through a wire.

The environmental deficits and debts that the world has incurred in recent decades are enormous. Economic debts are something we owe each other. For every borrower there is a lender; resources simply change hands. But environmental debts, especially those that lead to irreversible damage or losses of natural capital, can often be repaid only in the deprivation and ill health of future generations.

ECOLOGICAL TOURISM – THE NEW VIEW AT THE RECREATIONAL RESOURCES

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At a stretch of brief time the tourism has taken an important place in the world Economy. It is the most famous means that allows realizing large currency incomes to a state treasury at a short term of time.

Nowadays there are about 400 millions of tourist & this exponent is increasing for 4-5% a year an average. The currency incomes from tourism are growing up to more than 11% - as you can see it is more high rate.

The tourism is a profitable model of realization of goods & services of the state because it forms "invisible" or "latent" export. And this export has a 25% fate of the World's trade.

When estimating the social-economic mean of tourism we must remember the negative consequences of its development & not to forget about them. Because its main target has to be keeping the environment & life of humans in good order. Without new ideas & conceptions we are doomed to repeat an old mistakes over & over. We are to find the other, alternative ways to keep the biosphere in good condition in the next millennium. One of these fresh & perspective ideas is the organization & introduction of ecological tourism.

Ecological, green, agro - all these concepts are forming the new look at the modern tourist - the striving to escape from the city's daily fuss to bosom of nature, to come to know the surrounding world and to keep it in a good order to the next generations.

There are to be created the economical & organizational preconditions to develop the green tourism, like request of local bodies of control to propagandize & evolve movements, to use effectively inhabited funds that we have, to create powerful base of law to regulate economic activities & ecological problems of this kind of industry.

Agro tourism is very popular among different countries of West because of over saturation of historical monuments, exotic islands, also people care about their health, this kind of tourism is rather cheap & the tastes of consumers are always changing. Village is a branch that doesn't need huge investments at the first stage of development. It extends market of sales for home goods & services, makes additional places of work, and contributes to tributary of currency incomes.

In modern economic condition of Ukraine this kind of tourism can play the role of stabilization factor, it will contribute to keep either good economy level of village lives or development of service structure, provision of cultural and living facilities, social field.

Agro tourism has become a new coil of huge tourism industry. There are a lot of problems & obstacles on its way of evolution. The future is coming with it. And creating of this future only depends on us.

ENVIRONMENTAL IDEA NOW IS A GLOBAL RESPONSIBILITY "BUSINESSES ARE THE TRUE PLANETARY CITIZENS, THEY CAN PUSH FRONTIERS, THEY CAN CHANGE SOCIETY...."

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Ukraine has a long history with its horrors of ecological wars that the nature takes to us ...human. The problem of immanent ecological disaster is threatens us every day & every minute. It's often said that we live in the consumer society; we consider it's important to buy products & services. Companies need to be aware of the impact of this on the environment, the natural world around us. Many companies use broad use packaging (boxes, bottles etc.), which has been recycled, that's is made using old materials. Pollution such as smoke in the air can be reduced if our Ukrainian companies use train instead of road transport etc. The founder of the Body Shop international world famous skincare retailer, selling environmentally friendly goods once said "A good business should be a part of society, & you have to have pride in what you do. There's no pride in making millions of pounds, but there's a pride in helping people & the environment" Perfectly suitable statement, especially for Ukraine. It's widely known, that nowadays for many companies it's easier to pay fine than to follow ecological standards in Ukraine. But environment now becomes a business issue in Ukraine too. A new campaign is started in Mykolayiv aiming to reduce the amount of domestic waste, the waste of packaging. There was held a round table on the problems of building the plant to process the waste. It's planned that householders are encouraged to recycle certain waste products & to sort and prepare others for collection at specific sites. But we still have the main problem the amount of investments is extremely high & the culture of population is extremely low. People must aware of how they can contribute to improve the situation.

In Ukraine the contents of the average dustbin analysed consists of 35% of the total is composed of paper & card board, 22% of kitchen waste, 12% of plastics & glass, dust & ashes represent only 10%. So we can make conclusion that paper waste & plastics & glass can be processed, although the kitchen waste can also be processed into the garden fertiliser. Indeed, if more people choose to do this then the weight of the average dustbin reduced quite significantly.

But the problem still leaves the amount of investments needed is still high, though, the plant can bring rather high profits, these are long-range investments & companies now unfortunately need more dynamic ratio of capital turnover.

It was proposed not new ideas for utilising of waste

1. to produce clothing out of plastic bottles
2. to derive plastic bottles into the landfills
3. to supply glass for the glass industry

But many companies in Mykolayiv try to develop green-marketing strategies. These are mainly franchisees of world famous companies like McDonalds & others.

Introduction of the ecological mechanisms to production of environmentally friendly products are to far from reality. But the reality of dumps, falling into the rivers Ingul & Southern Bug is too sharp to resign to. The reality of mortal epidemic of cholera every summer in Mykolayiv region is too expensive cost for paper bills. Isn't it?

DUAL NATURE OF ECOLOGICAL DAMAGE IN EVALUATION OF MACROECONOMIC INDICES OF DEVELOPMENT

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The important question for the analysis of ecological component influence on dynamic of macroeconomic indices is investigation of economic essence and contradictions of concept "safe development" and "economic growth". The concept of safe development has evolved to the concept of *Sustainable development*, which allows the growth rate of economy of separate states, regions and world economy as whole to increase, under conditions of high quality level of environment in general.

Not denying the primacy of balance with environment principle observance, it is need to specify the fundamental position of accounting the role of ecology costs in the development rates and propose the interrelation system "Human - Nature". In this system temporary disproportions of development, as well as corresponding negative impacts of human to nature in one time period, will be compensated in another one; while, the durations of time intervals will correspond to the waves of technological progress. But perhaps those could retard in true time, due to the inertness of technological complex, which provides the production of all consumer goods.

Economic development is advisable to consider through the well-developed and unprejudiced macro-indices, such as GDP, GNP, National Income and others. "Ecological expenses" concept could be evaluated as ecological costs at the price of a product, ecological costs in the production cycle, damages at consumption and recycling of termination product, damages to third persons in the process of goods production and consumption, potential danger of this good production and so on.

The proposed model is based on the functions of marginal utilities and marginal costs for achievement of quality of environmental level. The model is predictive and is based on wave cycles. Functions of marginal utilities and costs have a good predictive validity only within the separate intervals, which correspond with waves of technological progress. In the beginning of cycle utility is much higher than costs, but towards the end of the cycle costs are becoming equal to the utility and there come the conditions for a new technological hitch. The same situation appears with the quality of environment and expenses for its cleanness achievement, since we consider environment as a certain good or resource, which has its own consumer price, own consumers and producer or, rather, "non-pollutant". As a rule, every next cycle is shorter than the previous one, which is caused by rapid rates of scientific and technological progress growth and informational hitches.

Thus, considering ecological expanses in a sense of economy development multiplier, along with informational technologies, advertising etc., it is possible to talk about positive influence of these expenses to economical growth. Consequently, it is possible to draw a conclusion on duality of nature as a category of ecological-economic damage from the point of view of economic development.

Let's enter the following concepts: GEP_1 – *irretrievable part of gross ecological product*, i.e. irrevocably used resources, the biodiversity, which is lost forever and other forms of unrequited to nature harm. GEP_2 – *retrievable part of gross ecological product*, which consist of extra expenses for extra produced product, as a result of general negative effect for human, industrial and housing stocks, etc.

Thus, just the second component is ecological multiplier of economy development. For the accounting of ecological component, we can express GNP by a formula: $GNP = CTP + GEP_2$. Where CTP is clear termination product.

Then, the condition of balanced growth of state growth is the function system:

$$\begin{cases} GNP \rightarrow \max \\ GEP_1 \rightarrow \max \\ GEP_2 \rightarrow \max \end{cases}$$

According to the above noted, it is possible to draw a conclusion on necessity of perfection of final results of economic growth in a view of ecological factor, optimization of index of economy development with the help of clear termination product index (CTP) (i.e. termination product minus economic damage from pollution of environment or expenses for some environmental protection measures), necessities of consideration the question of influence of ecological expenses minimisation on macroeconomic indices at different optimums of environmental quality.

INTEGRATING THE ENVIRONMENT IN THE PROJECT LIFE CYCLE

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The objectives of project management are two-fold. The first is to assure that projects conceived and approved contain acceptable risks. Another objective of project management is to effectively plan, organise, implement and control each project activity simultaneously and to ensure that set objectives are achieved on schedule and within approved budgets. The project manager and the functional project leaders must direct the planning and control efforts, understand and believe in the strategies and tools used, and create a good project team spirit. The concept of project life cycle has been, used over the years as a planning and management control tool in the implementation of project activities. However, until quite recently, financial and economic considerations constituted the bottom line criteria in the conceptualisation, planning and implementation of project activities. Environmental risks and quality were often ignored. It is possible to avoid, or at least to minimise, the negative consequences of poor project planning and management by integrating the environ-

mental factor in the project life cycle. Successful project management must use effective techniques and all the necessary information that permit the integration of environmental risks in the project life cycle. The internal and external elements of a project should be critically assessed to enable the identification of associated environmental costs and to integrate these in the overall project budget. In this way, the project itself will be responsible for paying for any environmental quality impairment it might cause. The internal, external and competitive environmental factors should be analysed to enable the identification of all the associated costs. Most countries are faced with serious environmental problems and are continuously struggling to improve upon the quality of their immediate surroundings. The planet is rendered less habitable. Fundamental environmental problems such as the atmospheric ozone depletion, the global greenhouse effect and diminishing biological diversity are mainly due to activities conceived and executed as project programmes.

An effective complementary way of identification of environmental costs is a proper assessment of the internal and external environmental factors and of them in terms of their potential to impair environmental quality. Finally, the different phases of the project life cycle themselves can also be analysed and the environmental risks and costs associated with each phase assessed and computed in the project budget.

GLOBAL PERSPECTIVES

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Two over-riding trends characterize the beginning of the third millennium. The global ecosystem is threatened by grave imbalances in productivity and distribution of goods and services. A significant proportion of humanity still lives in dire poverty, and projected trends are for an increasing divergence between those that benefit from economic and technological development, and those that do not. This unsustainable progression of extremes of wealth and poverty threatens the stability of society as a whole, and with it the global environment.

Secondly, the world is undergoing accelerating change, with environmental stewardship lagging behind economic and social development. Environmental risks from new technology and policies are being overtaken by population growth and economic development. The processes of globalization that are so strongly influencing social evolution need to be directed towards resolving rather than aggravating the serious imbalances that divide the world today. Resolving these imbalances is the only way of ensuring a more sustainable future for the planet and society.

The impacts of these changes on the natural environment are complex. The modern industrial economies consume immense quantities of energy and raw materials and produce high volumes of wastes and polluting emissions. The magnitude of economic activity is causing environmental damage on a global scale and widespread pollution and disruption of ecosystems. In other regions, particularly in

parts of the developing world, poverty combined with rapid population growth is leading to widespread degradation of renewable resources – primarily forests, soils and water. Many people living in subsistence economies have few alternatives to depleting their natural resources. Renewable resources still sustain the livelihood of nearly one-third of the world's population; environmental deterioration therefore directly reduces living standards and prospects for economic improvement among rural peoples. At the same time, rapid urbanization and industrialization in many developing countries are creating high levels of air and water pollution, which often hit the poor hardest. Worldwide, the urban poor tend to live in neglected neighbourhoods, enduring pollution, waste dumping and ill health, but lacking the political influence to effect improvements.

It is clear that if present trends in population growth, economic growth and consumption patterns continue, the natural environment will be increasingly stressed. Distinct environmental gains and improvements will probably be offset by the pace and scale of global economic growth, increased global environmental pollution and accelerated degradation of the Earth's renewable resource base.

However, trends towards environmental degradation can be slowed, and economic activity can be shifted to a more sustainable pattern. Choices for development, and levels and patterns of consumption, are shaped by human aspirations and values, and these choices can be influenced by policy intervention.

Some environmental trends over the past half-century demonstrate the potential of regulation, information and, above all, prices to encourage both more efficient and less polluting uses of energy and materials. Technology has already delivered astonishing improvements in product performance but innovation to improve resource productivity has so far lagged behind. Better public understanding of the environmental consequences of the consumer society have begun to catalyse profound shifts in purchasing behaviour and lifestyle choices. The challenge for policy-makers in the next century will be to devise approaches that encourage a more efficient, fair and responsible use of natural resources by the production sectors of the economy, that encourage consumers to support and demand such changes, and that will lead to a more equitable use of resources by the entire world population.

ECOLOGICALLY CONDITIONED TRANSFORMATIONS

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The ecologically conditioned transformation of social-economic life – such a kind of economic activity paradigm change the main reason of which is the willing to obtain economic profits from preventing environmental pollution. The preventing of environmental pollution becomes economically effective (profitable) and can be defined as the separate kind of entrepreneurial activity.

The mechanism of ensuring ecologically conditioned transformation of social-economic life: 1) ecological initiative; 2) ecologization of education; 3) the principle "polluter pays" (not to include environmental payments in cost value of production);

4) ecologization of economic agents relations; 5) introduction of effective governmental innovation policy; 6) development of all the new kinds of entrepreneur activity; 7) development of the service sector of economy.

Ecologization of economic agents relations. Economic agents relations are divided into relations of economic agents with government, other economic agents and consumers.

The relations between economic agents and government: 1) setting environmental standards; 2) stimulating ecologically safe activity of economic agents; creating potential losses for ecologically destructive economic activity (closing plants etc.); 4) granting privileges ecologically safe activities (exemption from required payments), lightening the burden; 5) granting subsidies for development ecologically safe activity.

The relations between economic agents: 1) conformity with voluntary standards for raw materials and semi-finished products; 2) conformity with obligatory (required) standards for raw materials and semi-finished products; 3) giving preference to goods which are made of recycled wastes or may be easily recycled or utilized (paper, office accessories); 4) taking into consideration not only the conformity of raw materials and semi-finished products with obligatory and voluntary standards but the ecological characteristics of partners' economic activity as well; 5) taking advantage of ecological component of economic agent's image.

The relations between economic agents and consumers (public relations): taking advantage of ecological component of economic agent's image; 2) informing local society about the ecological characteristics of economic agent's activity; eco-labeling.

SUSTAINABILITY AND ECONOMIC DEVELOPMENT. IS THERE A COMPROMISE?

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We used to live in conditions when everything was referred to satisfy our moment's needs and to increase the level of our well-being and comfort. Ideas of well-being are as old as human discourse, reflected in numerous discussions of "the good life" and "the good society". Too often it is assumed that what is "good for the economy" is automatically good for society. However, in reality, the way in which economic development is undertaken can have profound positive or negative impact on society and the environment. Many natural resources are non-renewable. And we have to think about our future and future generations. An expansion in consumption opportunities is good if thinking only about today's needs. And what about the air we are breathing, the water we are drinking and the land?

We have heard a lot about the concept of sustainable development. But what exactly is sustainability? What must be developed in a sustainable way? The idea of sustainable development has emerged, affirming the need to improve the well-being of the currently poor, while at least maintaining the basis of future well-being

to judge a strategy, we must specify what kind of problems such a strategy will solve. Environmental problems are often regarded as unwanted side-effects of economic activities, i.e., as negative externalities. But any activity, whether aimed at economic, cultural, or ecological goals, can have negative side-effects and, at the same time, side-effects can be social, economic, cultural, or ecological problems. A complete strategy for reaching sustainable development should be able to consider all possible activities and all their side-effects. It should also be effective. The use of the environment can only be prevented if socio-cultural and environmental processes are regarded as interconnected within the socio-environmental system as a whole.

A solution for sustainability in the long run implies that several specific physical conditions must be satisfied in addition to the obvious pre-condition of population stability. These conditions include the following:

- 1) mobilization of greenhouse gas concentrations in the atmosphere;
- Mobilization of activity (pH) in rainfall;
- reduction of dissipative uses, and wastes, of heavy metals to natural mobilizable levels, or lower;
- elimination of agriculture based on pumping "fossil" water from non-renewable aquifers;
- elimination of loss of arable land because of salination or erosion.

And in what way can we reach all that? Fundamentally, there is no reason if the aims of economic development (which are rarely stated explicitly, but usually understood to be about creating work, wealth and well-being) should be in conflict with sustainable development. Efficiency criteria of economic development help us eliminate inefficient policies, but they cannot be used to pick among the many choices in policies. The sustainability constraint could help us make the choice.

And first of all, we must reach sustainability at the local level. Yet in practice, most local economies are far from sustainable. Most businesses remain inefficient in their use of energy and resources. Local economic solutions can sidestep some of the problems and be targeted around specific needs and opportunities of sustainable development. Sustainable Local Economic Development (SLED) is a method of identifying the whole range of economic development and regeneration opportunities available, fully appraising the impacts of each, and prioritizing those opportunities that yield social, economic and environmental benefits together, rather than benefit at the expense of another. SLED has such characteristics as: explicitly identifying and integrating improvements in all aspects of quality of life - social, economic, cultural and environmental; an emphasis on increasing the capacity, opportunity and quality of life those who are currently unemployed, excluded or in financial hardship; helping communities to develop their own economic solutions; actively promoting good environmental management, respecting ecological constraints and exploiting "green" business opportunities; an emphasis on developing long-term solutions.

ECONOMIC-ECOLOGICAL ANALYSIS OF THE SITUATION IN THE FIELD OF SOLID INDUSTRIAL WASTE FORMATION IN THE ODESSA REGION

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The Economical system of Odessa region by its territorial structure sufficiently optimal concerned with natural, economical and social conditions needs of the inter-regional market. It represents wild territorial & economical complex with developed industry, agriculture and multifunctional transport recreation infrastructure.

Instead of general industry recession during the last decade in the region there is a progressive tendency, which is conditioned by technogenic load level increase? the natural environment.

For Odessa region sufficiently actual is the problem of formation and accumulation of solid industrial waste.

During the period since 1998 to 2001 in Odessa regional storage facilities it has accumulated toxic waste: of the I class - 0,189 thousand tons (0,004% of general quantity of accumulated waste in the region); of the II class -

0,81 thousand tons (0,016%); of the III class - 660,339 thousand tons (12,98%); of the IV class - 4463, 762 thousand tons (87%).

Many kinds of toxic waste can be valuable material for getting secondary courses, but the stage of its, but the stage of its utilization in the region is not enough for cutting technogenic load.

This time situation in the field of formation and accumulation of solid industrial waste, testify to the problem of industrial waste concerns to the less solved ecological problems of the regional level and is very important for the recreational potential of the Black Sea coast.

THE PRINCIPLE OF INFORMATION PROVIDING IN CONDITIONS OF REALIZATION ECOLOGICALLY STABLE DEVELOPMENT

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In the principles of making the model of ecologically stable development of the future there are some contradictions and factors, which don't allow making general theoretical and methodological approach. Therefore there is no generally accepted scheme of management, which is applied in practice in order to achieve the ecologically stable development, that's why the ways of realization of this model in different countries, different regions or plants are different and some times have contradictions.

to consider the quality of the management by the model of ecologically stable development depends on the level of perfection of communications strategy of ecologically stable subjects, because of their influence over environment,

the realization of the model of ecologically stable development depends on how well built the system of communication and in general an information field.

we suggest making general approach to make effective organization of information field of economic subject, which helps to improve progresses:

to receive the information; to treat and use information in organization structure to distribute information;

to plan strategies of development of communications inside of organization and with external environment, which will allow to speak about management information streams;

to integrate the structure of management by including motivation models, by which it is possible to raise the level of responsibility to receiving information and channels of information's transmissions;

to adopt organization structure to changing information field and channels receiving (spreading) of information.

to create information area using suggested scheme would raise the level of state responsibility of firm's surrounding by quality information of the management system to assist quality resource management of the firm,

WORKING FOR WATER

*Lemma Henk Tinus, Chris Lloyd Christiaan Gearog Frederik,
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Since the early 1980's research has been done on the effects of forestation, slash-and-burn, veldt fires and the managing of mountain catchment areas have on the water. Indigenous forests play a big role in the protection of mountain catchment areas against erosion.

Water, station plays a vital part in the economy of the country and the protection of mountain slopes. However alien plants have sprung up along streams and in floodplain areas of rivers which only decrease the runoff and causes erosion along the banks.

Water for king for water is the biggest conservation program in Africa that entails the elimination of all invading alien plants. The program was launched in 1995 as a multi-dimensional public works program. The aims of the project are:

- to ensure water security,
- to improve ecological integrity,
- to restore the productive potential of land and promote sustainable use of natural resources,
- to invest in the most marginalised sectors of Southern African society.

The **vision** of this project is to increase the runoff into the streams and to increase the general flow of water and to help prevent erosion through lessening the effects that a fire has on the soil that then causes erosion. Rehabilitate wetlands that have dried up over the years through the invasion.

This program provides **employment** for thousands of previously unemployed workers. Of the workers 58% are woman, 23% youth and 1% disabled. So the program does not only help the environment but provides thousands of people with an income.

Alien plant species are exotic and came into the country in various ways. Our indigenous plants have adapted to our climate and conditions. Alien plants invade because there are no natural enemies that destroy them like in the countries where they come from. This creates a major problem with infestation.

Not all alien plants use more water than the natural vegetation, but trees tend to use more water than grasses and shrubs, thus where grasslands have been replaced by invading trees there will be less water to flow into the streams.

The **economic impact** of water losses is that it reduces the water that flows into our dams, which supply most of our water needs. Because of this more dams and structures have to be built to ensure an adequate supply of water. These structures cost millions of rands.

Infestation by alien plant species is not just concentrated in South Africa but also spreads to other countries lying on our borders.

LOCAL OPTIONS TO INNOVATIVE TECHNOLOGIES

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Teresa Yamana, Massachusetts Institute of Technology

Adrian Lopez Perez, Yukatan Autonomous University

Gurdas Singh Sandu, Sant Longowal Institute of Engineering and Technology

Wathanyu Amatayakul, Chalmers University

The world population by the year 2100 will be in excess of 12 bln. If current trends in technological progress and innovation continue, the demand for energy will then be 5 times greater than now. If we continue the policy of using coal, oil, gas at the present rate, then by year 2100 the global temperature will have increased by 2 degrees C.

This paper is aimed at looking on **implementation possibilities of environmental technologies**. The stand place for outlook on what is a technology are basic needs. So by vitally important technologies which could really contribute to the well-being of society we understand technologies based on:

- water use
- biomass -
- solar energy
- wind - connected to the 4 main dimensions of the world and are in general

renewable

At the present moment renewable energy contributes only 11% to our primary energy. It is expected that 60% of our all energy will come from renewable energy by the year 2070

What is the definition of a local solution? It is the possibility of making a globally achieved progresses adaptable to local territories, which can be:

- a separate household (individual/family)
- farm or any household
- small community/village
- microregion/district

Local solutions involve collaborative partnerships that fulfil human needs and strengthen existing local agencies.

The terms for effective and contributive use of this technologies must be within the concept of sustainability and ecologically oriented:

- they must really contribute to the well-being of society and change the life of local people and profit them
- goes to nature
- contributes to conservation

Sustainable world at local level should be:

- efficient
- practical implementive
- innovative
- responsible
- improve understanding of the role of technology
- keep respect for biodiversity
- free of emissions
- cost-effective
- institutional development
- public participation
- empowerment of women, children and other groups
- respect for local autonomy
- educational framework
- equality
- renewable resources
- Environmental management systems

For example, International Institute for Sustainable Development has developed a framework for understanding sustainable livelihoods. Achieving sustainable livelihoods requires the **integration of local knowledge and community strengths with contemporary science, appropriate technology, enabling policies, effective and transparent governance structures, education and training, and credit and investment.**

What could be an impact of implementation of these technologies? Installing 1000 MW of wind power in Texas would add just 75 cents to average family's monthly electric bills. A national wind program that installed 10.000 MW of wind

over 10 years would create \$7 bln in direct economic activity, or 52 cents per American household per month over 10 years.

Fuel cells, PV, other small clean technologies are relatively unobtrusive compared to large power plants. Therefore, they are appropriate "neighbourhood technologies" for urban areas facing energy shortages, since they do not carry negative impacts on property values and neighbourhood quality-of-life. And if they are installed and maintained by local businesses and workers, they will contribute to new jobs and and capital investments in communities. For example, a new photovoltaic facility in Chicago is expected to create 100 new jobs in the city.

Sustainability principles	Reliance of different technologies to sustainability							
	Solar		Water		Wind		Biomass	
	yes	no	yes	no	yes	no	yes	no
Cultural diversity	X		X		X		X	
Technology and resources	X		X		X		X	
Ecosystems, biodiversity and resources	X	X	X		X		X	
Equality, equity and justice	X	X	X		X		X	
Public participation in political system	X		X		?			
Emotional and spiritual welfare and health	X		X		X		X	
Responsibility and respect	X		X		X			
Education	X		X		X		X	
Employment	X		X		X		X	
Lifestyle	X	X	X		X			
Global, national, local institutions and multinationals	X		X		X		X	
Economics	X	X	X		X		X	

Conclusion: "we should try to make these "YES" technological solutions be reliable options for sustainable development of local communities."

INTERNATIONAL COOPERATION AS A CREATION OF WATER RESOURCES SUSTAINABLE DEVELOPMENT MECHANISM

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The last years showed that globalization and international cooperation took on social significance in the economies of the majority developed countries of the world. The 10 years of Ukraine independence proved the necessity of the international cooperation, and first of all of the creation trusty, stable and equal relations between Ukraine and Russian Federation. On the one hand, the economical growth both countries makes positive influence on their partnership, on the other hand, mutually beneficial relations influence positively on the social and economical level of two countries' population.

Ukraine and Russian Federation have important mutual interests in the economical and other spheres. The environmental problem is the sphere of potential cooperation between two countries. It means the creation of new environmental systems, structural changes in the economical potentials of both countries.

For example, at the December, 2001, representatives of two countries formed Agreement about protection and using of the water resources of the Seversky Donets river. This Agreement means:

- mutual realization assistance of the providing stabilization and further sustainable development of the Seversky Donets river measures;
 - regulation of the consolidated environmental protected strategy working out;
 - the coordinated efficient water resources using on the mutually beneficial basis;
 - the developing integrated inter-regional water resources monitoring system on the geo-informational technologies basis for the timely data obtaining about ecological situation and for the managerial decisions adoption and extraordinary situations liquidation;
 - regulation ecological researches and environmental measures realization in the Seversky Donets river;
 - mutual planning of the cleaning structures reconstruction, modernization and equipping at the settlements and industries.
- Mutual skilled actions will lead to a success.

THE SIGNIFICANCE OF THE KYOTO PROTOCOL FOR ENVIRONMENT AND ECONOMY

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The Kyoto Protocol to the United Nations Framework Convention on Climate Change has become a summary of different conceptions purposeful on the organization in solving economic and ecological problems. It defines those principal structural elements on which the global efforts to solve climate change problem will be based in the XXI century.

This agreement provides flexible mechanisms making possible to soften the burden of accepted obligations, and in this meaning the direct results won't influence environment or economics very much. The realization of such obligations will stop increase of emissions and influence significantly economic growth. But such obligations reflect very important change of the course, and their structure is such that if they are ratified and fulfilled the effective international system affording to solve climate change problem will appear. In some directions the Kyoto Protocol may be expected to be the most important and principal agreement of the end of the XXI century.

So we can say with confidence, that the realization of quotas trade mechanisms provided by the Kyoto Protocol, if it's not significantly beneficial for solving climate change problem, won't harm absolutely at least, as it'll help stabilize greenhouse gas emissions to the atmosphere at the definite level.

The Kyoto Protocol is a prominent and unprecedented success of international policy. It combines strict obligations and flexibility in their realization. This success exceeds with its refinement everything the political scientists have foreseen. The Protocol's elements as strategic global obligations, quotas trade, financial mechanisms, political decision-making for minimization of negative consequences, methods of flow accounting, etc.- all of them form complicated complex the purpose of which is to make all countries of our planet join this Protocol and be active in its implementation.

The main Protocol's point is a calculation of obligations for 5-year period. Periodization creates a base for gradual development of The Kyoto Protocol in future.

Mechanism of quotas trade can create absolutely new market operating with some resources as emission permissions. These resources are a very artificial institution that helps curb the selfishness of particular nations and producers of countries and also not afford own venal interests to prevent protecting the common good. The necessity to possess and manage these resources will be gradually growing.

The realization of mechanisms provided by the Kyoto Protocol is still a complex matter. We should understand yet, even not speaking to accept it unanimously. Social, ethic and law principals are necessary to establish at the international level to make all these mechanisms work. All other Protocol's aspects will become effective only after they are developed and polished up.

However the Protocol has already had two principal achievements. Firstly, the Protocol's adoption has convinced the private business that the world is really beginning to solve climate change problem, and those will be the first to join this process, won't lose. Secondly, the work over the Protocol has contributed greatly the discussion of international economic mechanisms beginning from how to create them and finishing about their realization. But the Kyoto Protocol can be destroyed as well from the inside by mercenary spirit of some countries that opens a way to the inflation as from outside, if those countries wanting no agreement cooperate with the countries dissatisfied by it very much and block the ratification of this issue in the main countries. But it's unlikely. The governments have already made a lot of political efforts to create the Protocol. We've got strong basis and there are no alternatives worthy of confidence. The world has already begun ambitious and effective project, which will help solve the most dangerous for the mankind ecological problem, and there is no way backwards.

Now international quotas trade market hasn't been created yet, but its division has already begun and has very significant international dimensions. And I'm sure Ukraine, if it doesn't want to be again among the countries-outsiders, has not to avoid participation in this process as it has all opportunities to raise big money making its contribution on solving climate change problem because trade of CO₂ emission quotas can become profitable business if they are included into the mechanisms of greenhouse gas reduction which are considered to be causes of global warming.

SIN AS THE CATEGORY OF ANTHROPOGENIC ACTIVITY AND ECOLOGICAL-ECONOMIC SPHERE

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Having heard the word "sin" the majority of people consider it to be connected with religion. However, this word represents much wider category of social life.

First, according to well known concept, sin is some bad action, which may lead to negative consequences for the man himself or his environment. Thus, the category of "sin" fulfils the function of some *counter-principle*, i.e. common rule, which must not be followed. In particular, Bible commandments "do not kill" and "do not steal" correspond to sins "to kill" and "to steal".

Second, one of sin indications is *in advance* awareness that the given action(s) may cause damage. Usually, sinning man cannot see or predict all the harmful effects, which might be caused due to action done by him. But he knows for sure they may proceed. Pronouncing the phrase "everything has own price" one understands usually "the price of a sin". Only those who are aware of harm of their actions a priori can be considered as sinning ones. By the way, this is the principal difference between a *sin* and *simple mistake*. Mistakes are done not intently – sins are done more or less consciously. Mistakes to be done and corrected. Sins to be realized repented and

expiated. So, the personal evaluation of his/her own actions is very important. Sins made by a man (they might be action caused by laziness, negligence, callousness), often lead to very hard (although unexpected) mistakes. Consequences due to the later ones may cause, particularly, destruction of optimality, completeness, and harmony in nature. Sometimes, that transforms into environmental disasters. The Chernobyl catastrophe is one of them.

Third, seemingly, the concept of sin appeared in the human society, as the instrument of forming the *inner prohibitions* of each personality. It was vitally important in the areas of human activity, where other instruments and mechanisms of regulation of public relations could not be used. This particular feature of sin increases considerably the necessity of acceptance of the sin concept in the modern society. The modern world is characterised by a strong growth of technical power of each individual and his/her capacity to cause irreparable damage for nature and society.

We can see the manifestation of sins practically in every sphere of human activity. As a rule, one executed sin drags a tail area of other sins and their consequences. Disruption of harmony in the small areas drags the disruption of whole system.

Thus, it is possible to indicate three forms of manifestation of a sin in the system of human activity.

1. *Horizontal (spatial)* manifestation, in relations of "subject – neighbour" which is the consequences of the human activity, which we could observe in the context of one generation. The result of resource distribution between different subjects of human activity; the difference between rich and poor countries could be an examples of this type of sin manifestation.

In the previous example, we can say, some subjects (individuals, companies, countries) live at the cost of others, virtually they steal their common environmental goods, include the anabolic potential of nature.

2. *Vertical (temporal)* manifestation, in the relations of "subject – descendant". The consequences in this case are felt during quite long time period, between different generations. As an example we can see the existence of nowadays generations "at the costs of descendants".

In this case, the violation of the commandment "do not steal" occurs during time period. So, it could finally result in a violation of the commandment "do not kill" in respect of whole human civilisation.

3. *Volumetric (spatial-temporal)* manifestation, in the relations of "human – humanity" and "humanity – others inhabitants of Earth". In this case the consequences are felt for whole planet integrity. Examples of this form could be ecological catastrophes, destructive experiments of genetic engineering and so on.

Certainly, for prevention of environment negative impact and execution of harmonic activity, a human needs a base of the number of ethic indicative peculiarities, where we could mark out the following:

• *Horizontal ethics*: ethics between a human and society, as well as between different subjects of society (subjects of economic activity, within a country, as well as between countries).

• *Vertical ethics*: ethics between generations, in the context of family, as well as in the contents of whole society;

• *Ethics of global relations*: between inhabitants of separate regions and Earth society, between living human and the whole human civilisation, between people and other forms of life (bioethics, ethics of genetic experiments, ethics of global society relations, ethics of spaceship "Earth" crew relations).

All the above-listed indicators should help to put limits on permitted interference of a human with nature, therefore that should help to formulate the concept of ethics, which will be adequate to a current situation.

Talking about environment, we should remember, that Nature is transformed or destroyed not by itself, but under the impact of man. And his/her spiritual (moral) condition plays the decisive role here. The anthropogenic background of ecological problems shows, that we tend to change the world around us in accordance with our own interests; therefore, the transformation of nature should begin with the transformation of the human being. Therefore, answers to many questions raised by the environmental crisis are to be found both in the human, and in the spheres of economy, technology or politics, which are ultimately the reflection of human morality or immorality. But there is no reason to ignore huge positive motivation potential of all above-listed spheres. We could achieve great results, using them.

ECOLOGICAL BUILDING THROUGH PARTNERSHIP

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In Europe, parks and forests are at a premium. People want to live amongst nature, but by moving to such sites, they often destroy the woodland paradise they are searching for. It is discussed how a partnership was created between existing residents of a Swedish suburb, city authorities and new residents in order to provide additional housing whilst still protecting the environment.

Stockholm, with a population of several millions is one of Europe's greenest capital cities.

Naturally, the suburbs adjoining this nature reserve are particularly popular residential sites.

There are presented main project items more concretely in the following list of

• Preserve existing nature as much as possible

• Avoid blasting away rocks and hills.

• Adjust buildings and roads for topography (and not vice versa)

• Use water and other resources in an environmentally sensitive manner

- Catch rainwater in small ponds and streams
- Use water from local sources through a common pump-house
- Purify "grey" waste water locally (ponds, reed beds etc.)
- Improve on nature where necessary
- Enrich soil to make space for garden cultivation
- Prepare areas favourable for building greenhouses.
- Provide opportunities for community interaction
- Establish communal laundry, meeting/dining hall, and workshop

In construction of the houses, every effort was made to use ecologically safe materials. The use of any metals or plastics was reduced to the absolute minimum, and materials were selected according to three prime criteria: their production should cause low environmental impact, they should expose residents to no health risks, they should be easy to recycle. The roofs were made from terracotta tiles, which were placed over several layers of cardboard used as insulation.

In considering the heating of the houses in winter, the decision was made to use a 'district' heating scheme, with all houses receiving hot water from a central boiler located in the communal building. In line with the desire to make use of environmentally friendly technology, the boiler installed was designed to run on "pellets" recycled from waste paper. The hot water produced is used in washing etc. and a heat-exchanger is also used to warm each house's radiator system.

The toilets installed in each of the houses were designed to separate urine from solid waste. The liquid waste is collected in on-site tanks and sold to local farmers. It contains very high levels of nitrogen and is suitable for use as a fertiliser. It is particularly valuable in Sweden owing to government taxes levied on artificial nitrogen-containing fertilisers. The detailed plans for treatment of solid wastes and "grey water" (from washing etc.) could not be fully implemented at the site because of geological conditions, but will probably be used at other similar sites developed in the future. Final clarification was planned to take place in a system of streams and ponds which would be lined with fruit trees, and which would ultimately have discharged cleaned, re-oxygenated water to the Baltic Sea. Unfortunately, the permeability of the local rock made the plan unfeasible for this site. The communal house is well used by residents - allowing much social interaction - and residents happy with their living environment occupy all the houses.

The residents feel positive, and see how ordinary people can make real and positive contributions to the protection and beautification of the natural environment. This is a message they take throughout Sweden with them when they visit other communities planning similar developments.

The city housing co-operative (HSB) has been quick to incorporate the new skills it has learned at the city-wide level. The project has shown clearly how ecological building is the future for Europe.

THE NATURAL RESOURCE POTENTIAL AS THE ECONOMIC GROWTH FACTOR IN UKRAINE

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Ukraine has a wide range of fossils, which should play the main role in the domestic and foreign markets. Today, when energy prices are constantly increasing, the volumes of fossils extraction are decreasing. Also, during the recent years, the new oil, gas, coal, ore, gold, copper, titan and other chemical feedstock storages have been discovered. Land resources are among the most important factors in material production. The "National Program of Land Protection in 1996-2010" suggests certain measures aimed at protection, reproduction and improvement of land resources. Also, the sun and wind resources should be paid more attention. For example, Germany has more than 60 thousand sun batteries, each of them allowing to save about 600 liters of fuel during a year.

Considering the natural resource potential as the factor of economic growth in Ukraine, it is necessary to account for its regional diversity, and especially that of landscapes.

Analyzing the natural resource potential, it is necessary to consider the following principles:

- The category of the natural resource potential should be used relatively to the set of natural resources in a certain territory.
- Each territory has its own set of natural resources with sustainable interrelations among them.
- The size of the natural resource potential is quite dynamic during its industrial development.
- Different types of the natural resource potential have their certain periods, during which their quantities would satisfy the need for a sustainable development.

This is the main reason why the evaluation of the natural resource potential dynamics in the Sustainable Development Program should be given a leading place.

The high levels of the natural resource potential, the attractiveness of certain regions and industries for innovations creates the favorable conditions for economic growth of the Ukrainian economy.

THE TRANSITION TO A MODEL OF CONSTANT DEVELOPMENT AS A MAINSTREAM OF THE SOLUTION OF GLOBAL ECOLOGICAL PROBLEMS

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Each country has a relevant task of development and gradual realization of the concept of transition on model of constant ecologically safe operation of national economy. It is demanded by the solutions of an international conference of the UNO on environment and development which was held in 1992 in Rio-de-Janeiro. The

constant development is based on the coordination of concerns of social - economic advance and conservation nature - resource potential and favourable ecological conditions on a planet with the purpose of maintenance of vital needs of present and future generation. In this context an environmental protection and rational usage of natural resources is considered not as an object itself, but as an integral part of the process of social economic development. The basis of the concept of constant development is a parity of relations in a triad " Company - production - nature ". The transition to this model implements only under condition of effective international cooperation and warranting of national concerns of each state. Realization of this concept is possible at complex realization of measures of the organization: technological, financially-credit, internationally legal, administrative, which will implement world company, its regional institutes and each country separately.

As the solution of ecological problems is in methods and technologies of economic activities of the person, a rod of socio economic policy should be mutually ecologicalisation of modern effecting.

It means the implementation of resource keeping and ecologically safe schedules, means and methods of rational control of a nature-resource potential. Undoubtedly, only by shaping complete technological, organizational, economic and legal system, which one operates with the help of special regulators (control units) the accumulation of ecologically-economic conflicts is possible at first to brake, stop sediment slumping a world to ecological crisis, and then and to transfer national economic systems to model of constant ecologically safe operation.

The practice of developed countries testifies, that transition to its basic has already began; in essence new technical-technological policy - from monitoring of pollution of the environment up to measures directed on reduction and the warning of pollution.

In opinion of the foreign experts, application "of "green" technologies, the search and establishment of faultless of methods of economic activities is not only technical mean of the solution of ecological problems, and relevant method of coordination of concerns of socio economic well-being of the population with ecological safety, each state.

Ecologicalisation of development of production forces should be ensured with progressive modifications in organizational, economic, institutional forms of managing generally and including nature management. First of all it concerns shaping adequate ecologically aimed production relations of, both at a national level and in scales of international economic complementation.

COMMON EUROPEAN ENVIRONMENTAL POLICY

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The challengers of modern world require common regional and global policy for humanity survival. Creating the new system of economy and politics we should follow the goals and principals of common environmental policy.

The goals of EU environmental policy are outlined in the SEA and the Environmental Action Programs (with amendments introduced by Maastricht and Amsterdam) but remain broad and generalized. They include the promotion of "a harmonious and balanced development of economic activities, sustainable and non-stationary growth respecting the environment ... preserving, protecting and the quality of the environment ... [and] prudent and rational utilization of natural resources".

While these goals can be construed in many ways, EU policy has so far tended to focus on problems that are better dealt with jointly than nationally, such as the control of chemicals in the environment, the control of air and water and control of wastes. The EU has also been active in areas not normally defined as "environmental" at the national level, including noise pollution and the control of genetically modified organisms. It has been less involved in the protection of ecosystems, natural habitats and wildlife, the management of natural resources such as forests, fisheries and soil, and the promotion of energy conservation and alternative sources of energy. Among the underlying principles of EU policy are the following:

Integration, meaning that environmental protection must be a component of all EU policies that might have an environmental impact. This principle applies in only three other EU policy areas: culture, human health protection and consumer protection.

Prevention, meaning that the EU stresses action to prevent the emergence of environmental problems, rather than just responding to problems when they emerge.

Subsidiary, meaning that the EU must bound itself to dealing with issues that are best dealt with jointly, leaving the rest to be addressed by the member states.

Derogation, meaning that participant states unable to bear the strong economic burden of environmental protection are given longer deadlines, lower targets or financial assistance.

Poor accomplishment of these points are blamed on the lack of financial and technical resources, organizational problems within EU institutions, the fact that EU law has focused on developing policies rather than the means of implementing and enforcing them, and on the failure of all the parties involved in making policy to recognize the difficulty of meeting the goals they have set.

GLOBALIZATION ISSUES

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Entering into the year 2002, it is evident, perhaps more than ever, that the twenty-first century has undergone profound yet significant alterations. The tragic events of September 11th, the war on terrorism and the unprecedented move towards a global village have with out doubt led to a fundamental shift in the world of

politics. Modifications at the local, national and international level are now occurring at an unprecedented speed, fundamentally shaping and altering the lives of civilians worldwide. As power is more evenly distributed amongst a wide variety of players in the international system, the boundary between who is responsible and who is accountable is often blurred and not as apparent as it could be. Correctly addressing this problem is vital not only in ensuring that conflict and blood shed is minimized but also that those responsible for crimes against humanity are eventually brought to justice.

Globalisation is thus the fundamental theme for this abstract. What is globalisation? What are its current potential implications not only for future generations but also for the sustainability of our planet?

According to Thomas Friedman, author of 'The Lexus and the Olive Tree', globalisation is 'the inexorable integration of markets, nation-states and technologies to a degree never witnessed before – in a way that is enabling individuals, corporations and nation states to reach around the world farther, faster, deeper and cheaper than ever before.'¹

Globalisation appears to offer a multitude of benefits to many, an augmentation of technology, increasing interconnectedness and the emergence of a variety of new and interesting opportunities. This however is not an adequate representation of the world population as a whole, incorporating just a few elites and select countries as beneficiaries.

The concept that is often noted, implies that that globalisation is an 'unstoppable force', one that cannot be controlled or halted and one that in my opinion needs to be altered. For, if one is to see modifications, then it would appear fundamental that we grasp the notion that we can alter the way our world is being shaped.

I present the argument that the globalisation process needs to be adapted so that its benefits filter through to the majority and that serious actions needs to be taken to prevent the degradation of the environment, one within which trans-national corporations play a significant role placing corporate profits before social values. Although many are noting that the role of the state has changed significantly since the demise of the Soviet Union, it would appear paramount that the state uses more of its autonomy to control these outside influences. These could, if left untampered with, become severely problematic, not only having negative connotations on the millions who live in abject poverty but also on the sustainability of our delicate environment. The unprecedented scale upon which many species are now becoming extinct is seriously reducing the diversity of our planet and should therefore be pushed higher up political agenda's. The survival of the human species and our planet depend on it.

¹ Thomas Friedman (2000) *The Lexus and the Olive Tree*. New York

MAIN DIRECTIONS OF THE INTERNATIONAL ECONOMIC COOPERATION IN THE ECOLOGY FIELD

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The cyclical level of ecological problems objectively puts forward common comprehensive guard, preservation and conservation of earth ecumene by utilization of gains of all countries of the world. Due to general targeted operations world community it is possible to eliminate the threat of global ecological crisis and to decide a problem of resource ecological safety. The ecological factors become decisive shapings and operation of international economic relations.

Therefore it is expedient to consider reference directions of influence of ecological factors on international economic relations, their improvement and turning with according to this factors, also main directions of international cooperation in an orb of an environmental protectionism.

The development of nature and social productive forces, differentiation of resource ecological potentials of separate countries is invoked by alterations in international section of a transactions and occurrence of the new forms of economic complementation.

The relative level of the nature protection investments and carrying costs considerably oscillates. *Ceteris paribus* It reduces the international ability to compete of commodity producers in countries with more high level of the nature protection costs and on the contrary. So arises and the new phenomenon in international economic relations - ecological protectionism is distributed.

The ecological neo-colonialism, essence which one has appeared that quite often developed countries aim to decide own ecological problems at the expense of less developed countries. Through similar ecological expansion the tight ecological state of many countries is worsened and without that.

An overall peaking of a world ecological situation, intensifying of resource ecological relation of countries, the differences in capabilities of the solution of the national nature protection tasks, absence of the agreed ecological criteria and standards in the international scale, tendency to introduction by some countries of methods of ecological protectionism become the cause of transformation of ecological problems in the severe factor of international economic and political relations.

The international ecologically counterbalanced economic complementation could become the effective instrument of strengthening of ecological safety of stability of the person on a planet and also solution of complex social problems many countries of a world.

THE PROBLEMS OF THE NEXT CENTURY

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The basic problem that we will be facing in the coming century will be how to adjust the ongoing development with the limited resources of the planet we are living in.

Ecological economics is a transdisciplinary field that focuses on the linked goals of sustainability, fairness in distribution, and efficiency in allocation. As a result, ecological economists have more interest in a vision of the future, methods for analysing problems in new ways, and institutions and instruments that are needed to implement this vision. The Vision comprises the global ecosystem and subsystems and existence of feasible ecosystem for the future.

The above and many more visions are unlikely to be addressed by a single discipline. Hence a coordinated involvement of economists, ecologists, ecological economics, and perhaps many more professionals and concerned people will be a task.

We should have then the willingness and courage, now during the ISCS 2000 conference, to discuss the utmost possibilities of appreciating every one's discipline and its contribution to the visions so that we can all jointly reach to the best solutions (procedures), which can lead towards positive economic growth with minimum impacts up on the ecosystem which we all operate as the economic growth of our planet is unlikely to be deterred by any kind of law or regulations.

ECONOMIC INSTRUMENTS OF MANAGEMENT IN THE SPHERE OF ECOLOGICAL POLICY OF UKRAINE

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Conditionally it is possible to define some stages in a development of economic regulating system of environment.

The first Period. Till the 80th years in Ukraine (USSR) economic incentives nature protection activity practically were not in use.

The basic method of environmental management was:

- Administrative pressure on the enterprises
- Centralized financing of nature protection activity.

Thus, under the conditions of closed environmental information the scientists received the social order for production and systematization of this information. Ukraine became the center of such studies. The first customer was a project institute (building and constructive consultancy) in Kharkiv; scientists of Polytechnical institute became the developers. So, during the 70-80 years the in-depth studies were conducted and the unique scientific outcomes, which became the ground of further development of economic system of environment, were obtained.

Studies on economic assessment of natural resources began in the 70th.

In this period the method of applications of the economic final pays of damage to environment was developed. The systems of different coefficients permitting to take into account numerous external factors were developed.

The assessment of economic damage and natural resources allowed solving a problem of accounting for environmental factors in planning decision-making. The designed elements in that period were the nature of auxiliary elements of planning instruments.

The second stage 80-90 (practical realization of the system)

Considerable methodical and information basis for realization of following stage development of economic management system of environment was developed till the middle of the 80th in the USSR, so the realization of a principle "Polluter pays" became possible.

In 1992 the Cabinet Ministers of Ukraine accepted "Methodological provisions on definition of disbursements and payments on recovering of damage from a pollution of the environment" and "Provision of Republican Extra-budgetary fund on environmental protection". The given system includes 2 parts:

1. System of payments on recovering of damage from pollution of the environment.
2. System of accumulation and distribution of financial assets (Extra-budgetary fund).

Those two systems ensure fulfillment of two important functions:

1. Quantitative regulation and administrative monitoring of the processes of impact on environment.
2. Establishment of balance between principles "the polluter pays" and "the consumer pays".

ECONOMIC INSTRUMENTS FOR STIMULATION OF ENERGY CONSERVATION IN SMALL AND MEDIUM SIZED ENTERPRISES OF THE NETHERLANDS

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Small and medium sized enterprises take considerable amount of Dutch market with regard to general number of enterprises. In the same time, the activity of the small and medium sized enterprises influences significantly on the energy consumption trends. Up till now the government has not paid much attention to energy conservation problems in this kind of enterprises.

Now the definition and the implementation of effective policy instruments on energy conservation for small and medium sized enterprises (SMEs) turn into a hot issue. It demands careful and reasonable approach for making possible effective economical activity of the enterprises on one side and their environmentally friendly activity on the other.

If analysing policy instruments it is important to mention that not all energy conservation instruments can be applied for SMEs due to their size and the sector they exist in. The presentation includes an overview of the tools and methods for stimulation of energy conservation in small and medium sized enterprises in the Netherlands and contains the recommendations for the tools efficiency increasing.

Energy costs is not substantial item for SME, and usually the enterprises do not conduct special energy conservation policy. The special energy conservation policy usually is part of the general environmental policy of the enterprise. The choice of energy conservation instruments depends significantly on the kind of SME.

The main issues, which should be taken into account if analysing energy conservation instruments, are large number of such staff, restricted financial and technical possibilities. Advantages of the SMEs for energy policy implementation are the enterprises flexibility and mobility and high interest in the costs decreasing.

The following economic energy conservation instruments can be applied for SMEs: regulations and standards, voluntary agreements, environmental taxes and charges, tradable permits and subsidies.

The regulatory approach consists of the promulgation and enforcement of laws and regulations prescribing objectives, standards and technologies polluters must comply with. The regulatory policy supplies a unified approach to the enterprises in the issue of tax paying. In the same time there are strong arguments against the regulations in the sense of their economical efficiency and fairness if comparing with fiscal tools.

Effective fiscal policy instruments for SMEs are those who provide fiscal advantages to the companies who invest in environmentally friendly means of production. Taxes and charges provide a permanent incentive to pollution abatement and minimise total abatement costs of the enterprises and stimulate SMEs to provide more environmentally friendly activity.

Energy tax is a tax on energy carriers such as gas and electricity. The energy companies charge it on to consumers via the energy bills. The level of the tax depends on consumption. The extra revenues are largely redistributed to taxpayers through reductions in wage and income taxes. Such kind of regulations can be efficient if the reasonable level of taxation.

Energy investment taxes stimulate enterprises to invest in energy efficient means of production and renewable energy. Energy investment taxes are the most effective for greenhouse horticulture and transport sector. For SME enterprises this kind of taxes represents innovative energy saving instruments and stimulates to reduce fossil fuels as the raw materials use.

Green investments are also effective method of financial promoting of environmentally friendly projects. It gives tax allowance for SMEs, and interest and dividends from investments in "green funds" are exempt from income tax. Banks can use the money invested in green funds to issue loans for financing of environmentally friendly projects. The interests for such loans usually are lower than the rate of the standard loans. The method of financing is useful for district heating project implementation and housing construction.

Subsidies are good policy instrument for SMEs especially for non-profit sectors for CO₂ reduction plan implementation. According to Dutch Plan of CO₂ reduction goals, non-industrial heat infrastructure, traffic and transport projects can get subsidies.

Environmental management acts issuing is good measure for SMEs, mainly because voluntary agreements and covenants are not appropriate policy instrument for kind of enterprises. Environmental management act in this case means the paper about the company intentions in the field of environmental protection and particularly of energy conservation. It includes goals and means for the goals achieving

As the conclusion it should be said that stimulation of energy conservation in all and medium sized enterprises should be SME-specific (simple, low cost and easily accessible) and sector-specific. Taxes and charges are the most effective policy instruments for energy conservation on small and medium size enterprises. Environmental funds and subsidies also are good policy instruments for small and medium enterprises. In the same time the regulatory policy assumes a unified approach in the issue of the enterprises taxation. Economical inefficiency of the regulations and unfairness associated to it usually are the arguments against this kind of the policy instruments.

Environmental awareness increasing, energy labelling and issuing energy saving labels represent social instruments for energy conservation. The main goal of the instrument is to favour energy saving through environmental information issuing, environmental awareness increasing, training and consulting. There is sense to use this kind of policy instruments as additional to others, for example to tax incentives. Environmental management act that assumes informing consumers about the company intentions in the field of environmental protection and energy conservation is good additional measure as well.

ECONOMIC DRIVING FORCES OF ENVIRONMENTAL PERFORMANCE IN TRANSITION

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Studies of the economic driving forces of environmental performance (EP) in countries experiencing a shift from the command to the market economy are under-represented in the academic literature. This is regrettable, because exact knowledge of these forces would help both academic researchers and political decision-makers to predict the outcomes of the decisions made and the policies implemented at different levels of governance. My own study of the economic driving forces of environmental performance in transition (CITs), in general, and in post-communist Ukraine, in particular, aims to meet the need for such knowledge and to stimulate academic discussion of this topic.

The present paper examines the impact of economic processes on EP since the 1990s in twenty-seven CITs. After presenting hypotheses concerning some of

the effects of the most important macroeconomic variables on EP, I test these hypotheses using a principal component analysis on twenty-seven post-communist countries, which I sort into groups based on similarities in both economic and environmental performance, according to the results of cluster analysis. After this, using regression analysis, I study with greater precision the economic driving forces of EP in Ukraine. Preliminary and follow-up expert interviews with public, academic and political representatives document their awareness of these forces.

A high level of inflation, the energy intensity of the GDP, and a low level of foreign investment generally accompany poor EP, whereas the level of economic growth seems to have an insignificant impact on it. Such are my findings. The two major clusters of CITs closely correspond to the EU-accession countries and the others. The case study of Ukraine illustrates the general finding that changes in GDP structure, high energy intensity and low level of foreign investments have a strong correlation with national EP. Interviews generally support these results.

My conclusion is that the present development of Ukraine is unsustainable. I make an assumption that economic driving forces constitute a small proportion of the determinants of EP, which include political, geopolitical and cultural variables. The paper encourages the scientists of the region to study these driving forces more studiously, since the driving forces of EP may vary by country and by region. The work expresses the hope that the determination of the processes that have a drastic effect on the environment will promote the adoption of policies, which tread the path towards sustainable development.

BENEFITS OF COMPETITIVE APPROACH TO REGULATION AND ECONOMIC FREEDOM IN VIEW OF ENVIRONMENT PROTECTION

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It is common to express skepticism on ability of markets to provide effective environment protection. So, environmental policy is domain of the government. But bureaucratic system proved its low efficiency, especially in Ukraine. This work is continuation of paper I presented last year and it is devoted to finding and studying possible ways to make environmental policy more effective by using competitive approach and maintaining economic freedom.

While governing ecological issues government face several problems:

- It is necessary somehow find the optimal level of pollution and protection measures.
- Officials have to affect internal decisions of enterprises, which will certainly cause resistance and will have questionable effect because high level of corruption.
- Officials are often interested in creating long and extensive procedures that impose high costs on enterprises and society.

- There is a need to correctly arrange environment protection measures geographically and in time.

To reduce environment pollution by industrial and other wastes governments commonly use combination of three main methods. First ones are administrative measures (fines, etc.). These are the simplest methods of punishing those of entrepreneurs who caused serious pollution. Second ones are Pigou-like taxes. These are taxes imposed on polluters and proportional to estimates of negative external effects of pollution. Third one is standardization of products and production process for excluding main pollution sources.

These methods proved to be quite effective, but they have several disadvantages. Passage of law does not mean it will be enforced, especially when interests of governing officials do not coincide with the intent of law. Administrative measures are too often weakened by corruption and it's hard to use them before something bad happens. To use correctly Pigou taxes government should correctly estimate external effects. The possibility to find such estimates is doubtful. Also these taxes make taxation more complex and less effective. Government standards are often accompanied by long, expensive and ineffective check-up procedures.

One possible way to improve efficiency of environmental policy is maintaining economic freedom and competitive approach in regulation policies. There are some methods that allow transferring of decision-making in environment protection from officials to directly interested entrepreneurs and managers. These methods are: ecological audit, ecological insurance, competitive approach to ecological standardization. These methods also require government regulation and support but they allow transferring of control procedures from government officials to professionals who will be directly interested in results – ecological auditors, insurance companies, companies and non-government organizations. This approach can make check-up procedures more cheap, quick and effective. Also, the market of ecological audit and consulting will allow specialists in this sphere get real money for real work.

The main benefit of ecological audit is to transfer controlling functions from government officials to private auditors. The government only states when this audit is needed. Officials should interfere only if results of this audit are extremely doubtful. Based on this audit government will impose taxes, fines and other measures to reduce hazardous pollution. Ecological auditors will be interested in effective and cheap audit procedures because of competition among them.

Ecological insurance also have some benefits. It will make enterprises pay for possibility of ecological disasters and make them interested in reducing this possibility. Also if disaster happens it will quickly provide funds for overcoming its consequences.

Competitive approach to standardization is system of different levels of ecological standards. The higher level production and enterprise receives, the lower level of it pays. Also these standards can be an evident stimulus for customers to buy ecologically clean production.

So, an introduction of these methods can essentially increase effect of environment protection.

THE PERSPECTIVES OF FORMING ECOLOGICAL GOODS MARKET IN SUMY REGION

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By forming ecological market it is possible to remove the contradictions between economic growth and preserving (improving) the quality of environment effectively. Traditionally factory and domestic waste disposal plants, low-waste, energy-saving and raw-materials-saving technology, ecologically pure foodstuffs are considered among ecological goods. But besides that there are another goods which can be considered among ecological goods, i.e. those ones which favour to minimise destructive influence upon environment during their production and consumption. Let's regard some examples confirming the expediency of regional commodity producers' orientation toward ecological goods.

Ecological packing material (corrugated board). In Ukraine the growth of packing corrugated board production has increased recently. From point of view of ecology the tendency towards the development of packing corrugated board production can be explained by the possibility of its utilisation according with the purpose of recovered materials reuse for production of cardboard and toilet paper.

At present Sumy enterprise "Sumpak" (founded in 1998) produces corrugated board. Such packing is required by many commodity producers of Kharkov, Poltava regions as well as of some other regions of Ukraine. Real consumers of such packing are: distilleries (Sumy distillery), cooling plants (storage "Kholodilnik"), dairy factories (Sumy city dairy factory, Belopol'ye dairy factory, Romny dairy factory, Krasnopol'ye dairy factory etc.), meat-packing plants (meat-packing plant, Konotop meat-packing plant, Akhtyrka meat-packing plant) other small and large enterprises.

Ecological wallpaper production. Taking into consideration great demand and minimal proposal of cheap domestic products at Sumy region market the enterprise organised the production of ecological wallpaper in Akhtyrka. Sales are accomplished within the bounds of Sumy region, mainly in Akhtyrka district. The enterprise specialising in construction and repair works at offices and habitable premises the main consumers of such wallpaper. The wallpaper of such a kind are not ecologically clean manifold products: flexography printing wallpaper, wallpaper, self-adhesive wallpaper, wallpaper of any length, packed with respect specific consumer's demand.

Ecological children's furniture production. Akhtyrka enterprise "Fun" makes furniture to custom design and serial orders of private persons and enterprises in Akhtyrka as well as of other cities and regions of Ukraine. The enterprise holds a share of furniture market in Akhtyrka and Sumy region as well as 3% of Ukrainian market.

Mirrored up-to-date German equipment, progressive technology and ecologically high quality materials both home-made and imported (Germany, Czech republic, Italy) are used in production of these furniture. The main consumers of this furniture are in the cities of Akhtyrka and Sumy region. Other regions of Ukraine provide a small part of orders. Among consumers there are private persons and such organisations as kindergartens, children's camps, sanatoriums, children's homes, orphanages, boarding-schools. But as a rule such organisations don't possess financial resources necessary to buy new furniture. That's why real consumers are only those who function on self-financing basis, or those ones, which have sponsors, or those who are in (pro-schools and schools).

Equipment for food and processing industries producing ecologically clean products. Akhtyrka JSK "Nefteprommash" produces filling-and-capping machines holding all the kinds of liquid (lemonade, mineral water, juice etc.) in glass bottles (0.5-1 litre) and corking with metal corks as well as for bottling liquid in plastic bottles (1-2 litres).

Sales are accomplished within the bounds of Ukraine. Main consumers are agricultural firms, food industry, and private firms. Entering the CIS countries market is difficult because of strong competition.

At present approximate needs of Ukrainian consumers for filling-and-capping machines equal (items): agricultural firms - 95, food industries - 175, private firms producing drinks - 630, farms - 100.

Gas-meters setting. The problem of gas consumption calculation in private life appeared after Ukraine had become independent and Russia had claimed to settle accounts for gas consumed. As gas becomes more and more expensive suppliers' consumers' demand for gas-meters will increase.

The main consumers of gas-meters are gas service and municipal communication service, construction organisations, owners of flats and houses. According to the data annual construction organisations' output is equal to 250 thousand flats equipped with gas-meters.

Gas service and municipal communications service buy about 195 thousand gas-meters per year. The poll made allows to find that approximately 311 thousand owners of flats and houses install gas-meters by their own initiative. Thus the total size of Ukrainian market of gas-meters accounts for 756 thousand items per year. The

Sumy region market is approximately 50 times smaller.

The list of examples may be continued and all of them show the expediency of commodity producers' orientation toward ecological goods, which are economically effective in sphere of production as well as in sphere of consumption and ecologically safe from the point of view of destructive influence upon the environment. And still as follows from all the above mentioned such products are new for the market, i.e. they may be regarded as innovations.

In conclusion it is necessary to underline that forming ecological innovations will help to solve economic, social and ecological problems, and assist in the region's and Ukraine's economy transition toward ecologically sustainable

socio-economic development creating conditions for entering society of civil countries at the equality basis.

THE ECOLOGICAL CRISIS – A CHALLENGE TO THE ECONOMY

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Since the early 1970s, the world has increasingly become sensitized to environmental issues. Today, an ecological crisis of many dimensions is looming which affects all countries and could jeopardize the globe's life-support systems. It is characterized by a depletion of the ozone layer; a substantial accumulation of greenhouse gases inducing climate change; accelerating degradation of air, land and water quality; accumulation of industrial and household wastes; depletion of the earth's natural resource base and loss of biodiversity. High rates of population growth and poverty in developing countries and wasteful consumption and energy use patterns in industrialized countries are the root causes of these developments. Unless a markedly different mode of economic activity is introduced, the sustainability of the ecosystems on which the world economy depends may be endangered.

The effectiveness of ecological policies will greatly depend on the ability to curb and reduce world population growth and an improved distribution of the population within each country. Environmental problems are multi-dimensional and can only be solved by multi-dimensional measures. The activities of any one country or individual have direct or indirect environmental repercussions on others. Policies must therefore be based on the recognition of global interdependence and be guided by the principle of joint responsibility: everybody must contribute, be it developed or developing countries, international organizations or the private sector, scientists, media or individual citizens. The ongoing dilution of ideological divides may facilitate the emergence of a one-world-conscience and improve prospects for effective environmental action at all levels towards a sustainable economy and development.

MEASURES TO BE TAKEN AT THE INTERNATIONAL, NATIONAL AND CORPORATE LEVELS

1. New and additional resources should be provided to developing countries to help solve the principal environmental problems of a global nature, even if this were to imply a shift from other programmes. While automaticity of resource flows would be desirable, it might only be feasible if built into an institutionalized leasable per capita system (e.g. green bonds for biodiversity).

2. Developed countries should be encouraged to provide specific resources to developing countries for the purpose of

- a) information transfer concerning environmental protection, including monitoring;
- b) encouragement of afforestation;
- c) assistance in the adjustment of energy price distortions;

- d) the transfer of energy efficiency technological know-how;
- e) manpower development and training;
- f) national resource accounting and reporting.

3. If developing countries continue to use old technologies and lack access to new technologies, all action by industrialized countries to tackle environmental problems will be undermined. Thus, it must be in the interest of all countries to ensure the transfer of new environmentally benign, energy-saving technologies to developing countries. While such technologies may initially be more expensive, developing countries should not be asked to pay more than the marginal cost as otherwise the very corporations and countries that may have caused the global problems in the first place would be rewarded. Given the shared interest in solving the problem, a case can be made for sharing the costs, too. Thus, mechanisms should be devised to compensate - within an internationally agreed system - for intellectual property rights of private corporations so as not to stifle private research (e.g. investment and research subsidies). The damage costs of non-transfer of such technologies would likely be higher than the substitute costs of such a mechanism. In this context, developing countries have advanced the concept of an "ecological debt" incurred by the developed countries over decades and centuries as a result of their consumption and production patterns, which could be offset through the transfer (at cost) of technologies now required. Also, the idea has been proposed to ensure technology through green bonds on biodiversity.

4. Developed and developing countries should co-operate in the design of new tropical products, using clean energy in their production, avoiding negative environmental effects during production and consumption and securing appropriate levels of revenue.

5. Capital-importing countries should create more favorable conditions for private capital flows to developing countries. For heavily-indebted countries, this means restoring credit-worthiness, in large part by formulating - with the assistance of the World Bank, the IMF and other international financial institutions - new elements for structural adjustment programmes that include policy modifications aimed at the elimination of wasteful and unsustainable exploitation of natural resources (e.g. through raising of resource prices and elimination of public subsidies and expenditures that exacerbate environmental damages). Governments should ensure that the multilateral development banks and the IMF take full account of such opportunities in their structural and sectoral adjustment lending.

6. The World Bank and regional development banks should be encouraged to continue with their fledgling efforts to channel additional resources to high priority natural resource management projects, especially to protect biological diversity, tropical forests, regional seas, and the global atmosphere. Given the limits on members' borrowing capacities and the fact that benefits from investments in these fields are not fully captured by the borrowing country, it is welcome that such loans have already been given on concessional terms. Member countries should support these initiatives and promote greater cooperation among development banks in that regard.

7. Governments should also require that multilateral development banks and international private banks apply the same level of environmental assessment for large industrial and public sector loans.

8. An international congress should be convened to develop proposals for

a) generally accepted accounting principles for valuing natural resources adverse impacts of environmental missions;

b) generally accepted accounting principles for use by corporations to rec environmental costs;

c) target levels of greenhouse gas emissions and allocations for participating tions (proceeding from existing baseline levels or the avoidance of increased level

d) major research and development programs to address:

- development and deployment of non-fossil-fuel energy sources;

- technical systems for controlling CO₂, methane, NO_x and CFC emissions;

- technical systems for restoring the balance between CO₂ emissions, plant/ocean uptake of CO₂;

a) the introduction of option values and a related increase in resource flow developing countries.

Recent trends in the US, Europe and elsewhere in regard to the legal liability large and especially transnational companies should be examined with a view increasing their responsibility for environmentally-safe sourcing, use and disposal products.

To the end, a new morality and solidarity in international relations, especially between industrialized and developing countries, is called for. All nations must be enjoined to assume their responsibility for the promotion of a natural and social environment - shared by all - that is both peaceful and healthy.

THE ROLE OF SOCIATAL MARKETING IN PROVIDING THE SUSTAINABLE DEVELOPMENT

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Sustainable development is a satisfaction of different human needs with a minimal damage for environment as it's impossible to avoid all the damage. That's why for providing the Sustainable development it's necessary to find such forms of satisfaction of the human needs, which would influence on the environment with minimal affects. Such form is ecological wants.

But for consumers, which are on the first 4 levels of needs' satisfaction (according to Maslow), ecological wants are not principal, also as for producers in the first 4 of the conception of marketing.

The ecological marketing is one of the forms of the conception of Sociatal marketing. In initial ecological marketing had become the producers' answer to the demand of customers for preservation of the environment. But nowadays producers ready play an active role in environmental protection. Ecological marketing means searching and realization such directions of the development, which would

maintain the balance between interests of producers, customers and society. We can distinguish 2 main tasks of ecological marketing:

1) orientation of goods and production to the satisfaction of ecological wants and

2) formation and development of ecological wants.

So, producers play the main role in creating of green products and implementation of purifying technologies, emission control equipment and management of recycling wastes, and also reducing of waste's quantity, consumption resources and energy. At the same time informing customers and their ecological education are also very important, as notwithstanding the innovative ecological characteristics, the production can't be accepted by customers. Producers can draw the new environmental stakeholders (public organizations, environmental and social activists, retailers, educators, children and other ones) to format the ecological wants and the influence of level of ecological knowledge and consciousness.

The education of society and development of ecological wants are necessary for principle solution of the ecological problems. Promotion the level of ecological consciousness and model of ecological wants of population will assist ecologization of the production and economy.

So, ecological marketing is the key factor in the time of proceeding to the principles of Sustainable development.

THE POSSIBILITIES OF INDUSTRIAL WASTE RECYCLING

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The formation of the nationwide policy in the field of industrial waste and waste from consumption usage needs a proved program-aim approach-decision. Therefore the State program of waste usage began in Ukraine in 1995. This program is valid up to 2005. It envisages the concentration and direction different sources for prior tasks and measures according source savings and decreasing of harmful influence on the environment.

This program reckons for making and implementation of uniform system for waste management in all levels of economy management. For more profitable adjustment of relation with wastes the Ukrainian Law "According Wastes" was proved in 1998. This law envisages availability of some given spurs for waste recycle plants like the exemptions in taxation of goods from wastes, prior State credits, subsidies from budget and funds, etc.

This program makes a system of priorities for consequent accomplishments of measures in waste making and usage of made one.

In the frame of the program we want to illustrate some possible directions of waste usage with examples of industrial union "Khimprom", "Centrolit", "Rezinotechnika".

The quantity of refuse phosphorus gypsum of "SumyKhimprom" is more than 10 million tons. Despite on wide field of this waste usage and availability of good proved technologies this refuse is not used in "Khimprom" now. You can see some

possible ways of phosphorus gypsum use: building industry and road construction, agriculture, paper, rubber, lake-paint industries, cement industry, sulphur acid production and other.

In the "Centrolit" plant there are many tons of wasted forming mixtures. The main difficulty is the different content of initial forming mixtures therefore there are different properties of wastes. Forming mixtures can be used in different ways: building industry as ordinary sand with better properties, for instance, in production of lime concrete or lime-and-sand bricks, in road building – as litter and isolation layers (due to hydrophobia properties), in formation of slopes, etc.

The problem of old tyres usage is old too, but still it has big ecological value. Tyres are absolutely not fire proved, and products after non-control incineration are very toxic. At present there are a lot of ways how to use old tyres: without additional modification, rubber fines obtaining, regenerate production, pyrolysis, cement production, etc.

Some of these technologies for waste recycle are planned to put into practice at Sumy's plants.

THE ACCOUNT OF TRANSACTION COSTS IN THE THEORY OF ECOLOGICAL DAMAGE

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I think everybody will agree that ecological situation is worsening now. At the same time much attention is paid to environmental protection. But, why we still observe this disappointing tendency? The causes of it may be either the theory non-fulfillment in practice, or the theory inapplicability to modern reality. Evidently the complex of these two causes brings such a result.

In my report I shall stop at one of these inapplicabilities. It will concern Transaction Costs. Ronald Henry Coase entered this term to economic analysis in 1960. During several years economists were ignoring such type of costs. In 1961 Coase Theorem was proved and by means of it the existence of Transaction Costs was shown and admitted. Adding this term to many books was as a result of it. At last in 1991 Coase got Nobel's Award. In general, Transaction Costs mean costs of market mechanism operation. We also have a modern classification of Transaction Costs.

In USA such costs amount 50% of GDP (Gross Domestic Product).

What do we have in our country? Now we are living in a crossing period. Planned economy was before it, where Transaction Costs actually didn't take place. The compulsory condition of carrying out Coase Theorem is zero value of Transaction Costs. I'll try to prove you Coase Theorem by means of PJSC "Sumykhimprom" as an example. It is necessary to demonstrate two cases, when "Sumykhimprom" respects the bringing damage and doesn't respond. In the first case the plant has a choice: either buy a purifying equipment or make a determined payment. It needs about 2 million \$ to modernize all equipment and buy a new purifying system or it may pay 5 thousand \$ to compensate the economical damage it brings. What do you think

choice? In the second case, when "Sumykhimprom" doesn't respond to the damage, the Government is interested in decreasing the level of pollution and it agrees to finance nature protection costs. It suggests the sum that equals the bringing economical damage. We can see that it is not enough and purifying equipment won't be bought again.

These two variants bring the same result. Environmental pollution will be continuing, but this arrangement of resources is considered effective, regardless of rights allocation.

As it was mentioned above, such a situation may exist only when Transaction Costs equal zero. Now these costs play a huge role, because today we have a situation when planned economy has been already destroyed and market economy is still building. That's why crossing economy is characterized by enormous Transaction Costs. We have no right to ignore these costs! Let's take the most profound ecological book. It may be any book of professor Balatsky. There we can find no mention of Transaction Costs, because each formula was accounted according to the "yesterday's" situation there. But today we have quite another state of affairs.

Let's return to our example. The cause of this result is that the standard economical damage was fundamentally marked down. If we want to have a real value of economical damage it is necessary and compulsory to account Transaction Costs. Maybe only then the result will be quite another.

Our future efforts should be directed to the formalization of the new notion "Ecological Transaction Costs" and the account of these costs in the theory of ecological damage.

ECOLOGICAL AND ECONOMICAL SUBSTANTIATION OF HEATING EFFICIENCY INCREASE FOR JSC "ROMENSKY MOLOCHNY COMBINAT"

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The energy audit carried out in 2001 at JSC "Romensky molochny kombinat" has revealed a number of ecological and economical problems of the enterprise connected to the irrational use of energy resources. During the audit it was found out that for 2000 the average overexpenditure of natural gas has come to 21% or 116,000 m³ (34,500 USD per year). Except the financial losses, it has resulted in 32.1 t of CO and 10.3 t of NO_x environmental contamination.

In order to increase the heating efficiency of the enterprise by results of energy audit it was developed the complex of energy conservation projects on modernization of JSC "Romensky molochny kombinat" boiler-house:

- the project # 1 - the reconstruction of boiler-house with the replacement of water-trumpet boilers by heat-trumpet boilers and implementation of smooth automatic control of loading;

- the project # 2 - the implementation of the control target energy monitoring system, connected to the automated boiler-house;
- the project # 3 - the separation of housing sector heating from manufacturing heating by new water-heating boiler-house creation;
- the project # 4 - the separation of housing sector heating from manufacturing heating by existing boiler-house translation into a water-heating mode.

For substantiation of offered projects introduction expediency there were made some calculations of projects' economic efficiency with regard to the ecological factor.

According to the calculations the complex ecological-economical effect from implementation of all offered projects at JSC "Romensky molochny combinat" will make 468.110 USD or in average 66.870 USD per year. The general value of investments will make 346.000 USD. The priority projects, which are characterized by the greatest value of ecological-economical effect, are the 2-nd and the 1-st projects. The payback periods of projects calculated on the basis of ecological-economical effect value change within the limits of 0,85-6,05 years and they are less than the payback periods calculated on energy resources economy on 25 %.

Thus, the substantiation of energy conservation measures implementation efficiency on the basis of ecological-economical effect' calculation allows to raise the investment appeal of such projects at the enterprise level and stimulates their practical realization. The best illustration of this is the project # 3 for JSC "Romensky molochny combinat". Calculated on the fuel economy basis economic efficiency parameters of this project, such as the complex economical effect and the payback period, are negative. So, from the economical point of view the project implementation is inexpedient. The calculations of ecological-economical efficiency parameters of the project testify, that the given project is not unprofitable, but its implementation provides the reception of ecological-economical effect at the rate of 7.380 USD

After the realization of all projects offered to implementation the natural gas consumption will make 1695.814 m³ per year or 47,24 % from the consumption volume of 2000. The emissions volume of JSC "Romensky molochny combinat" will make 15,18 t of CO and 4,85 t of NO_x, so emissions will decrease in 2,12 times.

THE USING OF ECONOMICAL AND MATHEMATICAL MODEL FOR SOLVING PROBLEMS OF ECOLOGICAL AND ECONOMICAL EFFICIENCY SUBSTANTIATION OF ENERGY CONSERVATION MEASURES

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Practical realization of energy conservation measures needs considerable investments, as a rule, so there is the objective necessity of taking into account the mentioned effects during the decision-making of the energy conservation projects' im-

plementation. It will allow to optimize the ratio of derivable results and energy-saving expenses. The economical and mathematical optimization models can be used for solving applied problems, concerned with the optimization of decision-making in energy-saving. The mathematical instruments' using allows to manage the process of energy-saving effects redistribution between their recipients. In general form the function of net energy-saving result can be presented as:

$$P(x_1, x_2, \dots, x_i, y_{i+1}, y_{i+2}, \dots, y_j, z_{j+1}, z_{j+2}, \dots, z_n) = f(g_1, g_2, \dots, g_m)$$

ecological results
economical results
social results
factorial indicators

The given function connects different factors, which can influence on the energy conservation measures efficiency and ecological, economical and social results of energy-saving. Inasmuch as we are interested in function maximization, so:

$$P(x_1, x_2, \dots, x_i, y_{i+1}, y_{i+2}, \dots, y_j, z_{j+1}, z_{j+2}, \dots, z_n) \rightarrow \max$$

Set of constraints for this mathematical model includes limitation in factors and reachable net results. Factorial constraints consist of limitations connected with the manpower, material, financial resources etc of the territory, where energy conservation measures are realized. The constraints connected with the energy-saving results include the establishment of production output minimum volumes during the energy conservation measures' realization, the inadmissibility of established limit projects' pay back periods' excess, the correspondence with environmental challenges etc and the requirement of reachable results' non-negativity.

In this mathematical posing the problem can be used for the optimization of energy conservation measures complex's choice, which are offered for the implementation, with the purpose of receiving maximum ecological and economical effect of energy saving under the minimum expenses for its achievement. It can be used also for energy-saving results management with the aid of factorial indicators' change (sensitivity analysis) etc.

AUDIT OF POWER - COMPONENT OF ECOLOGICAL RESTRUCTURING OF THE ENTERPRISE

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Historically in Ukraine, as well as in many other countries, the problem of energy was considered from the point of view of maintenance by power resources. This approach was saved in range economy of power, because the main attention is given to effective effecting of energy and a little - effective to usage.

The approach in usage of energy, which one is adopted in West, reputes to go in the opposite direction: from the main consumers of energy through networks economy of power to the sires. The main consumers in the beginning are inspected out with the purpose of definition of measures on reduction power consumption. Then the networks economy of power are established for maintenance of the ultimate us-

ers by indispensable quantity of energy. And, at last, systems of effecting of are modified for maintenance of new lower necessities in energy.

For realization audit of power there is a definite methodology, which one compass contained following:

1. Comprehension of process and correlation of its stages: a primal problem the auditor is: to understand the main stages, starting from acceptance of raw material and ending shipment of finish products.

2. Definition main power consumption of stages: on the basis of mass power balances determine main power consumption of stage of process. Outcome activity - list of main segments, which one require a padding research.

3. Realization of gauging: realization of gauging on main power consumption stages of effecting by the help of the established gears.

4. Comparison of the data: a collocation of information about specific consumption, it per unit of manufactured production.

5. Detection of the potential designs: detection some The designs, which can be executed. To them concern following: 1) designs which are not require the costs or with the small costs: modifications of methods of activity with the pose of maintenance of an overall performance of the equipment, medium repair measures; 2) designs requiring of the mean costs: introduction padding automatic monitoring systems, small designs on heat utilization; 3) designs requiring the high costs: large modifications of processes, i.e. renovation of process.

6. An assessment of the designs: an assessment from the point of view of economies of energy and indispensable capital costs, which one are required implementation.

ECONOMICS OF POLLUTION CONTROL

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Economics has become a dangerous preoccupation of our time, so that we have become singularly attached to making money and blind to the quality of our environment. We seem to be trapped in a growth-dominated economic system that is causing growing depletion, pollution, and disamenity, as well as increasing the probability of ecological catastrophe.

Economics plays an important role in pollution control. The chief goal of pollution control is to achieve the maximum reduction of pollution, which yields the maximum benefit, at the lowest cost. This can be done by cost-benefit analysis. Determining the true cost of pollution, including all externalities, can be quite difficult.

Who pays the cost of pollution control is an issue of hot debate. Some argue that consumers should bear the burden, because pollution is a co-product of the goods they buy. Others argue that taxpayers should pay, because they have long allowed many industries to pollute and should bear some if not all of the responsibility for cleaning up the environment. An intermediate group suggests that there are

consumers should pay; for example, when new plants are being built, the cost of pollution control should be incorporated into prices so the consumer pays the cost of environmental protection. This group also argues that the taxpayer should at least help bear the burden of older industries facing new rules.

Historically, pollution control has been enforced by punitive measures, mostly fines. Economic incentives could also be used to get companies to abide by environmental laws and regulations.

Pollution and environmental destruction cost society billions of dollars a year, but it does not do so. Conventional wisdom suggests that environmental regulations and laws delay projects, increase the cost of doing business, decrease productivity, and ultimately cost society jobs. Careful studies show that these beliefs are largely blown out of proportion.

Some economists suggest that a new economic system is necessary for the long-term survival of the human race. A spaceship, or sustainable economy would promote recycling, conservation, the use of renewable resources, and a clean and healthy environment. People would live within the limits posed by earth. Such a system can succeed only with widespread population control and new political institutions. The most fundamental change would have to be an ethical shift. Overall, the shift to a sustainable society can come from a combination of economic, governmental and personal actions. Obviously, a steady-state economy, to be successful, must be adopted on a worldwide scale.

UKRAINIAN BANKING: ECOLOGICAL ASPECTS

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Since 1991 the UN program UNEP has been working throughout the world. This program promotes the banking activity in solving world ecological problems. 34 banks from foreign countries have signed the declaration about realization of ecological function by banks.

In 1997 the concept of sustainable economical development was developed and accepted in Ukraine and one of its points was creation of ecological banks. To our point of view successful function of specialized ecological banks in modern Ukrainian situation is not possible. There are a lot of objective problems. But now we can develop ecological function in universal banks. Ukrainian universal banks have opportunities and motivation to realize these functions.

These are following bank operations, which can be the ways of banks ecological activity [Table 1].

Credit activity: Provide ecological credits on favorable terms, use a Special instrument to provide modern ecological technology in Ukrainian enterprises – ecological leasing, make ecological assessment of creditability of clients;

Investment: Banks would control goals and facts of usage of funds, which are invested by them. Another way – is ecological expertise of investment's projects.

Deposit activity: Ecological deposits - the positive points for a client is the opportunity to buy apartments in safe districts as far as ecological risks, and ecological deposits also can have favorable rate.

Table 1	
ACTIVE	PASSIVE
<p>Credit activity [ecological risks should be included in credit analysis]</p> <p>Investment [ecological expertise of the projects]</p>	<p>Deposit activity [account ecological aspects in the deposit policy of the Bank, as example develop "ecological deposits"] ;</p>

Ecological funds at the non state level would be actual in Ukrainian economy. The Ukrainian banks can operate these funds. As a result we can solve a problem! addressing of ecological payments and guarantee discount rate for the banks in their credit activity on favorable terms.

Foreign banks can also use ecological lotteries to accumulate money for activities to solve ecological problems. But for Ukraine it is only a perspective way.

Today the only real ways are credit and investment ecological activity! Ukrainian banks.

ASSESSMENT OF BIOPHYSICAL AND SOCIO ECONOMIC IMPACTS

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Impacts are estimated as the differences over the study period between the environmental and socio-economic conditions projected to exist without climate change and those that are projected with climate change. There are different approaches to impact assessment. Some of the more commonly applied techniques of evaluation of results are described below.

1 *Qualitative description.* The success of this method rests on the experience and interpretive skills of the analyst, especially the analyst's ability to consider factors of importance and their interrelationships. Formal methods of organizing qualitative information also exist (for example, cross impact analysis).

2 *Indicators of change.* These are particular regions, activities or organisms that intrinsically sensitive to climate, and which can provide an early or accurate indication of effects due to climate change.

3 *Compliance to standards.* This may provide a reference or an objective against which to measure the impacts of climate change. For example, the effect on water quality could be gauged by reference to current water quality standards.

4 *Costs and benefits.* These should be estimated quantitatively to the extent possible and expressed in economic terms. This approach makes explicit the expectation that a change in resources and resource allocation due to climate change is like

the benefits as well as costs. It can also examine the costs or benefits of doing this to mitigate potential climate change.

graphical analysis. Impacts vary over space, and this pattern of variation is important to policy makers operating at regional, national or international scales. These spatial differences may have consequent policy and planning implications. The geographical depiction of the effects of climate change using geographical information systems (GIS) is one method of describing impacts.

1.1 *Tiling with uncertainty.* Uncertainties pervade all levels of a climate impact assessment, including the projection of future GHG emissions, atmospheric GHG concentrations, changes in climate, their potential impacts and the evaluation of impacts. There are two methods which attempt to account for these uncertainties: uncertainty analysis and risk analysis.

RESOURCES CONSUMPTION ESTIMATING UNDER ECOLOGICAL MANAGEMENT SYSTEM INTRODUCTION

Anna Shvindyna, Sumy State University, Ukraine

« Ecological management system introduction is urged to solve the problems that hinder the managing of enterprise environmental activity.

« purpose of ecological management is sequential improvement in all fields of activity where it's possible.

« sequential improvement principle assumes that in process of nature management (here is a necessity to weight output and input for optimization of industrial

industrial indicators (prime cost, profit, profitability, yield of capital investment, labor productivity) don't systematically repel neither damage caused of production nor payments for natural resources using, nor costs for reconstruction, maintenance and reproduction of environmental quality and quality of resources, indicators refute environmental impact and include such indexes as amount of economic damage due to environmental destruction per unit of production, amount of wastes per unit of production, amount of lands per unit of production, amount of resources per unit of production, energy-intensity.

The problem is, at first, in fusion of all ecologically significant directions of activity in general system, at second, in environmental impact estimation.

Therefore the working out a long-term ecological program there is expediency of working out the resources consumption scheme, as an important aspect of nature management.

• scheme foresees two stages: analysis of situation for evaluation of resources consumption and then the balance stage goes.

1. balance of energy and goods (balance of nature) is used for fixing of energy balance transformational process, next their estimation and their environmental impact. In Germany entire conception of balances is developed and it consists of several balances: input-output balance, balance of processes, balance of production and consumption placing.

The result of optimizing resort-ecological-economical calculations is that must serve as a platform for conclusive basing and realization of ecological program. The ecological program will approach to the balanced ecological-ec system using that forms of calculations.

ENERGY APPROACH TO THE EFFICIENCY ESTIMATION OF THE AGRICULTURE

Olga Solyanik, Sumy State University, (Ukraine)

Farming is the one of the main factors that defines further public development present days.

Modern economical activity causes environmental load to exceed ability of simulation. Foregoing situation breaks the interrelations and sets the ecosystem degradation.

The agricultural technologies intensification puts the fertile soil out of circulation, leads to landslide and erosive processes, and breaks the natural circulation of biogenic energy. As a result, problems compensation and balance restore agrosystems requires increasing energy investments in the form of machinery equipment, fuel-energy resources, human labor and fertilizer contents. Such intensification leads to energy costs growth per agricultural production unit and reduced energy outcome per hectare.

Agriculture is the unique sector, which can be characterized by multiplying of derivable energy output over total energy costs of production. For example, in New Guinea the yam growth takes 14.6 calories per each supplied calorie; in sorghum growth takes 14.2; in the peat soil of Polesie the ratio of input to output energy flow fluctuates in range of 0.47-3.9. Such effect originates from transformation of solar and soil energy by plants.

Energy approach to analysis of agriculture efficiency is very modern, it is an analysis of different energy sources influence on energy efficiency of agricultural technologies.

The scientists from many countries put an attention on energy costs of agricultural production, in that way the maximum output at one hectare is received. But such sharp increase determines efficiency decreasing. This situation is evidence of following searching of energy flows interaction in nature, analysis of its value and structure influence on agricultural production! retrieval of optimal ratio of energy input and output will maximize efficiency at fixed energy costs value.

Application of energy approach allows us to choose most effective technologies and activities commensurability of production and realization stages and growth of the profit for further production supplying and maintaining the agrosystem in balance.

INDUSTRIAL COMPLEXES' PROBLEMS AND THEIR SALVATION

Serhiy Varvarsky, Vinnytsia town's youth intellectual club "Dialogue"

It is man's vital activity that defines the Earth's environmental condition. The course of historic development shows that initially there was no concern about developing industries and facilities intended to process natural resources. It is natural as if nature was quite capable of managing independently those undesirable changes (that technological progress was bringing about. Intuitively it was assumed that the process of accretion of negative factors in the environment had been proceeding by linear law. However, the development of industries, communications, engineering, as well as intensive progress of production in the countries where these industries had not existed before, showed that these processes had been proceeding exponentially; a comparison with the conditions of an explosion would be quite pertinent here. Furthermore, because of an ever-growing scale of pollution (here have arisen certain links whose interplay affects some of the environmental components as these are being polluted. Indeed, "acid" rains may come as a result of atmospheric pollution, such rains affecting the water and soil. This will have a negative impact on animal husbandry, and so on, and so forth. In other words, the same exponential relationship is observed to exist while assessing the ecological safety of nature from harmful impacts on it. Hence, even qualitative indicators show that the Earth's environment has been polluted to such a degree that it is not far when many processes may turn irreversible. Environment protection organizations have been accumulating the necessary initial data so that a mathematical model could be built up for structural analysis of environment, even in this field, more often than not, encounters serious troubles because of the lack of data on many countries. The scientists say they are ready to create a contemporary phenomenological model of the environment safety conditions and use it as a basis for a mathematical simulation of the process, thus laying down scientifically justified criteria for forecasting possible sequences. The indicators of today - minimum permissible concentrations, percentage content of noxious substances, etc. - are particular criteria of assessment which do not indicate intricate relationships within the process.

The ecological situation in the world shows, it is impossible to protect a single nation from the noxious impacts of man's production activity in the world. The Chernobyl Atomic Power Station, fires in the Amazon River upper basin which have had direct impact on their lands, devastating inundations in Europe and Asia, etc., have also affected the global ecological situation insofar as no single nation can maintain safe ecology within its territory, try as it could. The only logical conclusion from the above is that noxious impacts on ecology can be fought successfully only on international scale, each country strictly following the legal provisions which, as a rule, are based on the UNO recommendations.

One of the ways out of this difficulty may lie in international specialization in the production of apparatus and devices designed to protect the environment. Such

actions will naturally require the coordination of efforts of the manufacturing countries and adoption of common legal regulations. Another vital feature of the questions under consideration consists in that any environmental protective system must be built on complex approach. Obviously, any attempts to protect separate components of environments (e.g. soil, water or atmosphere) will fail to achieve success. It should be noted here that the existing devices not always meet the modern requirements and fail to withstand the ever-growing danger of ecological disturbances. It dictates the necessity to develop new approaches in designing ecology-protected devices, making use of the latest achievements in science and technology.

CONCEPT OF INFORMATIONAL SOCIETY IN CASTELLS' FUNDAMENTAL STUDY

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The Study of Spain-American sociologist Manuel Castells is dedicated to the cultural, social and economic situation in a period of mankind entering the new epoch, which author himself names "informational". Today Castells is considered one of the most authoritative sociologists in the world. He belongs to international academic elite.

The revolution of information technology is "starting point in analysis of formation difficulties of new economy, societies and cultures". Castells does not fear accusations of technological determinism and emphasizes that "technology is a society, and society can not be understood or described without its technological instruments". However Castells does not take any standpoint of orthodox Marxism. He says that technology does not determine the history evolution and social changes. According to Castells, technology is a resource potential for society development that gives different variations of social changes. The society here is free to a great extent in decision making about the way of its motion. According to Castells, the invention of personal computer and the following computerization was not predicted by technological laws. The alternative of "PC" was the concentration of computer technology development in hands of large corporations (IBM) and governments. Under such way of society development the totalitarian trends of the general control gradually grow, the power possibilities of government, armed with computer technologies, expand, and society to a growing extent begins moving to models described by J. Orwells In book "1984".

The Informational Society changes the perception of time. Let us remind, one of the most important signs of modernization of West society became changing attitudes towards time. The bourgeois epoch has ultimately transformed time into economic resource, and accompanying it technological changes have submitted to mechanical rhythm of working machines.

The Castells' conclusions concerning Ukraine and C.I.S. countries are not encouraging. He supposes that heritage of soviet statism, multiplied on political and economic speculations of elite, as well as on voluntaristic recommendations of

International Monetary Fund, has brought Ukraine and other country of the former Soviet Union to destruction of the basis of civil society. Collapse of soviet system created a cultural and information-economic desert, which is difficult to turn into "green garden" of informational society.

TRADE AND ENVIRONMENT IN SUSTAINABLE DEVELOPMENT

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In most countries environmental policy continues to be developed in isolation from mainstream economic, financial and trade policies that form the foundation of the global economy. In recent years, unprecedented trade and investment flows have resulted in increasing environmental degradation and natural resource depletion in many developing countries and countries with economies in transition, where complementary environmental policies remain to be developed and effectively implemented. Owing to fundamental linkages between environmental conditions and social welfare, these trends hinder national and international efforts to alleviate rising levels of poverty in the affected countries. The need for governments to develop mutually supportive trade and environment policies at the international level through multilateral agreements on trade, finance and environment, and at the domestic level, through integrated national economic and environmental policy regimes, is now more pressing than ever.

Reflecting countries' national priorities that globalisation should be harnessed to stimulate economic growth while supporting environmental protection and enhancing social welfare, countries should design practical policies that promote trade and international financial flows as engines of economic development, while at the same time ensuring that these flows support the protection of natural and environmental resources, and yield an equitable sharing of the benefits they provide. To ensure effective country-specific results, countries need to build national capacities in a consultative, country-led and transparent manner that responds to national socio-economic and development priorities and to the interests of a full spectrum of national stakeholders.

A growing body of evidence suggests that when externalities are reflected in resource prices, markets can work more efficiently to sustain natural and environmental resources. Within this perspective, countries should analyse how the implementation of properly designed economic instruments, and the removal of market distortions caused by environmentally perverse subsidies, can promote more sustainable resource extraction, production and consumption practices.

The country projects on the environmental impacts of trade liberalisation mentioned above also develop policy packages that include economic instruments to minimise negative environmental impacts, and hence maximise the net development benefits of trade and trade liberalisation.

Appropriately designed and implemented economic instruments can effectively contribute to the sound management of natural resources and the realisation of objectives of multilateral environmental agreements. To date, however, a number of constraints have prevented their wider use. Promoting the use of economic instruments to support environmental objectives requires enhanced understanding of their properties and effects, as well as strengthened human and institutional capacities for their design and implementation.

Developing a resource manual on how to develop and use economic instruments for environmental purposes and address implementation barriers aims to assist practitioners and policy makers. The first phase of the work, which is currently under way, takes stock of past experience with impediments to the effective implementation of economic instruments through literature reviews and policy dialogues with relevant stakeholders.

With globalisation, the need has emerged for Governments and decision-makers in the financial services sector to work more closely together to enhance their mutual understanding of the environmental risks associated with public and private investment and to develop policies and incentives that promote investments supportive of sustainable development and the specific objectives of multilateral environmental agreements. Some activities provide useful guidelines on practical ways in which the financial services sector can promote investments that support sustainable development.

FORMATION ECOLOGICAL CERTIFICATION BASES OF SYSTEM MÉNAGE IN THE FOREST COMPLEX

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Among the branches of economics forestry sets a fundamental position for surviving human society, as it is connected not only with raw materials production and commodity forest products, but it also embraces the reproduction of socio-ecological systems and functions of forest biogeocoenoses, that have a global nature.

The problem of fundamental development of theoretical and methodological bases of formation ecologically oriented market economic mechanism at the branches of forest complex at the connection of ecologo-economical indicators and measures is relevant now.

The main aims of forest certification are forest government perfection, providing customer admission to certificated forest goods, quality improvement of forest government control, development of forest taxes perception and using, increasing effectiveness of all work complex.

The compulsory specification of wood and accessory forest resources is a main instrument of correct forest ménage control, means it's inexhaustible forest use and quality reproduction of forest plantations.

The main interconnected concepts of ecological, economical and social bases of forest complex sustainable development embrace:

- * Maximal and foreground using of environmental protecting, environmental monitoring of forest biogeocoenoses from the positions of national and international interests;
- * all-embracing geophony of floral resources keeping as a base of biological diversity and future forest wealth reproduction;
- * ecological certification of ménage forest complex system;
- * consequent and all-round ecologisation of industrial manufacturing branches of forest complex range operation and reproduction activity at the base of active and wide application of nature-saving technologies;
- * making of complex organizationally economically juridical mechanism of forest offense, environmental pollution responsibility;
- * development of international cooperation at the sphere of forestry relations.

Today it is necessary to form principle new federal ecological policy on the strength of priorities and aims of ecologically sustainable socially economical development. One should find new forms of efficient force increasing government, and effective regulators of ecological orientation of economy.

ENERGY-SAVING MARKET IN SUMY REGION

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Since 1973 due to the world's energy crisis the market demand for energy-saving technologies and services was formed. In order to meet the growing demand the world industry of energy-saving technologies, equipment and accompanying services came to be. During the last decades effective way of energy use became one of the priority directions for economy development in many countries. The main showings in this development are energy-consumption of GDP, energy-consumption per capita in comparison with GDP, total energy-consumption of produced goods and services, as well as technologies.

Realization of practical energy-saving in Europe countries called forth conditions and infrastructure of energy-saving market, industry of producing and servicing of special technological and diagnostic equipment.

Ukraine as a state enters the market relations with great delay. It is 27 years late comparing to West countries. Ukraine keeps leader position in energy consumption per capita. Using 4600 kg of oil equivalent per capita it produces only \$2500 GDP per capita (in France, a country of the same size and population, it is 3845 KOE and 121113). Energy share in Ukrainian GDP is 1740 KOE/1000\$ which is 10 times bigger than in France - 182 KOE/1000\$. Same situation takes place in Sumy region: energy consumption - 3321 KOE per capita, GDP - 3282\$ per capita, energy share in GDP - 1012 KOE/1000\$.

Starting from 1997 there is a discrepancy between real extent of used energy and fuel, energy and fuel prices and actual customers' need in energy.

Thus arising of energy-saving market is produced respond to forming demand for energy-saving equipment and technologies on the interfacing energy market segment.

82% of questioned energy consumers in Sumy region confirmed the existence of demand for energy-saving technologies.

One of the top-priority in creating a territorial energy-saving market is making conditions for energy-saving infrastructure development both on state and regional level. Energy-saving policy in Ukraine is reflected in The Law of Ukraine "about energy saving".

The infrastructure of energy saving must provide the full complex of works of conducting energy-saving policy, provide conditions for energy-saving market functioning, meet interests of producers and consumers of fuel and energy. It includes:

- government organs of energy saving;
- structure of regional administrative management of energy saving;
- system of engineering and consulting firms;
- inner structure of energy saving management on consumers' level;
- system of financial securing and insurance of investments to energy saving;
- coalition of energy-saving equipment and technologies producers;
- coalition of building and assembly jobs and balancing and commissioning;
- coalition of enterprises developing nonconventional power sources;
- system of informational supplying as for innovations, educating of special population of energy saving in business and among citizens;
- system of commercial organizations for trading energy-saving equipment and materials, international trade.

Energy market is presented by the following branches: power industry, heat-and-power engineering, gas equipment system on one hand and industry, transport, agriculture, housing and communal services and budget sphere on the other hand.

The power industry of Sumy region is presented mostly by small capacity power stations that are in use for 30-40 years and longer. They produce 17,5 % of energy consumed in the region.

Heat-and-power engineering faces serious problems. The condition of power equipment hinders development of the area. Direct loss in power network comes 219 000 ton of equivalent fuel a year. 32.200.000\$ is lost every year while transporting. The second problem is the need of replacement of the worn segments of heating mains. Besides this rapid decrease of depreciation payments breaks down the self-financing mechanism of maintenance and restoring of heating system equipment.

The regional program of energy-saving is made on the basis of analysis of amounts of energy consumption in the region. The analyses show that energy-saving investments return different in different branches. The most profitable investments are those into communal services, light, food and chemical industry and agriculture.

The creating of energy-saving management system in Sumy region requires the following: well-educated specialists, capital investments, increasing of enterprise interest, changes in tax policy and credit system on the state level, normalization of costs, restructurisation of management and manufacture, creating the market infrastructure of energy saving.

PROBLEMS OF ECOLOGICAL EDUCATION

Skribuk Julia, Yanka Kupala State University of Grodno, Belarus

"Change yourself and the world will change"

Ecological problems solution is closely connected with the changing of human conscience. In our society ecological crisis is represented as something external to human beings. But efficiency of any actions depends on people's behavior and their attitude towards nature.

Structure of ecological consciousness includes

- Knowledge about nature and human-nature interaction;
- Emotional attitude to nature;
- Strategy of interaction with nature (Deriabo S, Yasvin V., 1995).

The dominating anthropocentric type of thinking determines consumer's attitude and perception of nature as an object. Pragmatic goals and motives penetrate any human-nature interaction. Even biological, geographical and ecological syllabuses at secondary school are impregnated by the idea of "profitable" nature (bad or useful logs, importance of forests for national economy, useful minerals etc). Therefore ecological crisis is first of all "crisis in heads".

Ecological consciousness is an alternative to dominating thinking. Ecological conscience comprises perception of nature as a subject, absence of opposition between human being and nature, balance of pragmatic and non-pragmatic goals of interaction.

Human being must refuse the conception of his superiority over nature. But an anthropocentric type of thinking is very settled. According to some surveys about 90% of people skip any information about ecological problems, because such information breaks their "safe image of the world". Usually people worried with ecological problems, closely connected with their vital activities and comfort (water pollution, air pollution).

Politics, economy, TV and especially education are important in the formation of the ecological consciousness. Nowadays education provides knowledge, which develops cognitive sphere of consciousness and ignores emotional and personal spheres. Therefore training forms of work are necessary in the youth ecological education.

Psychological principles of ecological consciousness formation:

- reflection – extension of knowledge about nature, imagination how animals see us, answer to the question "What nature means for me";
 - empathy – sympathy towards nature, animals, birds;
 - identification with animals, plants;
 - activity – participation in ecological actions;
- psychological games, modelling of different ecological situations (games "Karl Linneys descendants" (Yasvin V., 1998), "Advocate of animals", "The blind").

ECOLOGICAL SITUATION IN SUMY REGION

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The number of ecological problems in Sumy Region are remarkably extreme in general and particularly as it regards some problem areas in Ukraine. A conscious effort has been made to preserve harmony between man and nature in the region, preserving for all times its current designation as one of the ten best ecological areas in Ukraine. In a number of cases, the implementation of projects that might have led to further ecological degradation have been avoided by concerted action of the population and the government. The positive nature of the Region ecological situation is demonstrated by the following.

For example, the atmospheric contamination is almost three times less, than the average index nation-wide (3.6 τ/km^2 per 10,5 τ/km^2).

The volume of sewage disposal in surface water is equal to only 40 percent of the same parameter on a nation-wide basis. The discharge of untreated sewage into waterways is strictly prohibited.

The volume of the Region toxic waste formation is only 30 percent of the average on a nation-wide basis. Unauthorised dumping of waste is kept down to a absolute minimum by practical and enforceable rules.

A major contribution to the Region's admirable record on ecology has been the activist reforestation program. Sumy's reforestation record has been the best in Ukraine and has been maintained at a level of 170 percent of timber harvesting in the last ten years.

Rivers running through Sumy Region has retained a remarkable purity level in their waters, and lost none of their unique ability of self-cleaning. The best-known for purity are the Vorskla, Psyol, Seym, Sula and Desna rivers. These rivers provide the potable waters for some of Ukraine's largest cities and regions. Because of the peculiarity of the wind flows during the Chernobyl tragedy that blew most of the dust clear contamination in Belarus and further north, Sumy Region has negligible level of contamination in all populations areas.

Because of all the factors mentioned above, Sumy Region is ripe for development of ecologically-oriented industries, including the possibility of massive expansion of its established holiday camps and other vacation facilities. This holiday industry potential is further enhanced by the large number of historical sites that area directly related to the development of civilisation in this part of the world.

The available natural resources, plus the utilisation of existing and potential recreation facilities would allow the efficient handling of up to five million persons annually in the Region.

ECOLOGICAL AND TECHNOLOGICAL PROCESS OF THE MODERN METHODS HOUSEHOLD WASTES' PROCESSING AND UTILIZATION

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The problem of the annihilation or partial utilization of the NNW is urgent because of its deleterious effect on the environment.

NNW is an abundant supplies of the secondary resources and it is also the energetic carrier "free of charge". It is because household rubbish is the renewable coal-lignite energetic resource for the fuel and energetic complex.

But for any town or inhabited locality the problem of utilization and neutralization of the NNW is the ecological problem. It's very important not to upset the environmental safety of the town (city), municipal economy from the point of view of the social sanitation and hygiene and living conditions as a whole with household rubbish' utilization.

Foreign experience shows, that of the rational organization of the processing of household wastes gives the opportunity to use 90 per cent of utilizable products in the building industry.

There are the following basic methods of the deliverance of the NNW:

- incineration;
- utilization;
- burial.

The main of them in Ukraine is burial in the dumps and ranges. Rubbish-burning plants (works) show oneself negatively in the world experience. They are not on the economic ground. Rubbish-burning plants is necessary to use only for annihilation of the medical wastes, which are not suitable for any other methods of the utilization.

The more acceptable method is the processing with the help of the rubbish-processing plants because its' production may be used for the production of the construction (building) materials, paper and some other industrial products. Such plants successfully works in those place, where people presorting household rubbish before throwing out.

Unfortunately, there is no the constructive dialog white the discussion and realization of the projects about the processing and utilization of wastes. Such factors have influence upon this situation:

- bad grounding in ecology of the planners;
- bad legal base of the local government;
- the scantiness environmental regulations;
- the residential population's egoism;
- the role of ecological funds is not always constructive.

ENERGY CONSERVATION IN ADMINISTRATIVE BUILDINGS: ECONOMIC AND ENVIRONMENTAL ASPECTS

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Energy is one of the building blocks of modern society. It pervades all sectors - economics, labor, environment, international relations in addition to our personal lives - housing, food, transportation, recreation and more. Understanding energy means understanding resources and their limitation as well as the environmental consequences of their use. Energy and environment and also economic development are closely linked. And the inefficient use of energy causes many economic and environmental problems. Only using energy and resources in an appropriate efficient way would avoid most of these problems.

Energy consumption depends on two factors:

- Intensity (efficiency) of use
- Level of activity

Efforts of energy conservation usually concentrate on these factors.

Administrative and office buildings are one of the most powerful energy consumers in the non-industrial sphere. In such buildings is used more than 15% of energy resources in Ukraine. And all of these buildings have points through which heat, electricity and water are lost without being noticed and prevent. Energy auditing is the main solution of the problems; it is help not only save money, but also save environment.

The first step of the energy audit is to examine the heat, electricity and water consumption in the building. Excessive consumption of energy is determined and the report of the audit presents economically feasible energy conservation measures. One third of the saving can be made completely without investments and payback period of any necessary investments varies from less than one to three years.

Such work has been done in the Kharkiv Institute "Energoprojekt". After elucidating the consumption of energy and resources it was proposed the different energy efficient measures: change the type of the lighting sources, reduce losses of the heat through links in windows, doors and etc. Due to such measures the consumption of the electricity was reduced on 45%, the heat consumption on 60% and water on 28%.

A profitable blending of efficient energy and resources use with safe, sustainable sources to provide the same or better services while saving money, abating pollution and climate change, reducing the threat of nuclear proliferation and increasing global security.

ECONOMICAL EFFECTIVENESS OF CONSERVANCY IN INDUSTRY

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Usually the main problem during the discussion of questions concerned with conservancy is the one-side consideration of these questions. The results of actions directed to conservancy have to be examined on the three sides: 1) the origin of pollution (he is also the payer who has to introduce conservancy technologies); 2) the supervising institutions; 3) the society in general. These three groups have different positions to effectiveness of the conservancy.

At the same time each of these groups can influence (in different extents) on others: 1) the origin of pollution (payer) - harmful tailings influence on the whole society and compel higher organs react to it, i.e. conservancy actions influence to all the three groups too; 2) the supervising institutions (inspectorate) - think through the conservancy actions for firms and how to make firms to make necessary works for the conservancy; 3) society - public opinion, public conduct can influence on state institutions (inspectorate) which for their turn influence on the firms.

Only the intersection of the interests of all the three groups can result in effectiveness of the conservancy. Thus, expenses which firm has to spend for conservancy actions, can be represented as function: $C = f(P, S, I)$, where P - benefit (loss) of the firm, S - benefit (loss) of the society, I - benefit (loss) of the supervising institutions. Benefit (loss) is defined by the positive (negative) effect which occur as a result of conservancy actions realization (absence). So, for the solution of the ecological problems in State caliber there is necessary the legislation which affects in two sides: 1) encouragement of conservancy; 2) unprofitableness of non-invest into conservancy actions.

ECONOMIC DEVELOPMENT VERSUS ENVIRONMENTAL PROBLEMS: WHAT TO DO?

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Environmental problem is a non-treated or "weakly"-treated issue of population-and-environment interaction to be researched or solved.

Industrial waste is one of the basic environmental problems. Almost 70% of the Ukrainian gross product is produced at the metallurgical or petrochemical industry. It means that the biggest share of waste belongs to these branches. It includes different (in the relation to contents) residual products to be deleted, recycled to provide environmental and health protection.

Achieving economic reviving in Ukraine at the expense of environmental harmful branches in industry will lead to increase of harmful emissions to the environment. Besides it will lead to landscape biological productivity decrease and hygienic and epidemiological conditions of population vital activity.

The amount of devices (available on Ukraine) for catching and neutralizing harmful materials in an atmosphere is reduced, they fail. It takes place in condition of an economic crisis and absence of the investments necessary for restoration of national industry.

Hence, negative scenario of environmental situation development becomes practically inevitable; i.e. industry reviving and living level increase will take place multaneously with environment quality decrease. Transition to sustainable development model is one of the ways to overcome this contradiction.

ECONOMIC INSTRUMENTS OF SOLID WASTE MANAGEMENT

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Annually about one billion of tons of solid waste is accumulated in Ukraine. Approximately 10% of them are recyclable; others go to landfills, cone-shaped dump polygons and other specially retracted places. As a matter of fact solid waste is one of the most powerful factors of the environment pollution and negative influence on all its components. Annually about one million tons of waste is accumulated in Kharkiv. Approximately half of it is a solid waste (300-350 kg per year to each inhabitant). In the USA in the beginning of 1990-th the same index was equal 700 kg per year. For ten years this index has increased on 5 per cent.

According to the economic forecast in Ukraine the rate of solid waste growth will make 4% increasing per year until 2012 and then it will decrease to 2% per year. At the present time in Kharkiv there is the extremely unfavorable situation of the solid waste collecting system.

The solution of this problem is impossible without using of system approach. It is necessary to determine things and operating to make and how it should be implemented into. And then it is strictly to use miscellaneous methods and approaches such as minimization of costs and waste utilization, incineration and warehousing of polygons. But also it is necessary to boost the householders and commercial firms to waste reduction initially. The majority of problems, bound with waste, do not arise *a priori*. For this purpose it is necessary to take advantage of other countries experience such as Finland, the United States of America and Canada.

According to the Environment Protection Agency (EPA) of the USA, a solid waste hierarchy—reduce, reuse, recycle and compost, burn, landfill—reducing waste at its source is considered the best way to handle solid waste, while landfilling and incineration are the last options to consider. Some economic studies have shown that

recycling is less expensive than either incineration with ash disposal or long-distance landfilling.

A number of options are available for financing solid waste management facilities. Choosing from among these options will involve a variety of project issues: traditional loans, tax-exempt bonds (general obligation bonds, project revenue bonds), taxable bonds, state grants and loans and public funds.

During last ten years some new means, namely, the recycling system and the exemption system grounded on ecological favorable conditions were implemented into real life in several high-developed countries. Finland generates approximately 80 million tons of waste annually. Approximately 60 percents from industrial wastes of Finland are recycled. The Finnish Plan 2005 also indicates necessity of waste formation preventing.

The local government institutions can also conduct measures on urging the subjects managing, which one execute activity in a field of the reversal with waste, affording them privileges in case of participation in creation of objects of the reversal with waste.

TAKING ACCOUNT OF NATIONAL PECULIARITIES IN THE COURSE OF PLANNING ADVERTISING CAMPAIGNS

Negreba Oleg, Sumy State University

Nowadays many key specialists of marketing and advertising – while planning an advertising campaign – take into consideration and largely use Hofstede model – model that specifically characterizes culture of a country, based on a definite system of measurement.

Hofstede describes four basic developments of culture; namely these are symbols, rituals, heroes and values.

Symbols include words, gestures and objects that have specific meaning and are recognized by representatives of certain culture.

Rituals are common actions that are viewed as foundations of social existence.

Heroes, based on Hofstede, are represented by certain personalities, who can be real people or imaginary characters, our contemporaries or legendary personalities of the past, but all of them possess characteristics that are evaluated as high rates in the society and, therefore, become a subject of imitation.

Under values Hofstede means general tendencies of one state of things preferred over the other states. Value is one of the first things, which children familiarize themselves with.

Having performed a comparative analysis of cultures, G. Hofstede identified five basic dimensions of culture:

1) *Distance of power* – extent to what people - having less power – accept the fact of nonuniform distribution of ownership.

2) *Individualism opposed to collectivism* is reflected in cultures where people care only of themselves and members of their families, what is antipode to

those who belong to other members of a group or groups, which representatives take care of members of their family in exchange for faithfulness of the latter.

3) *Man principles opposed to principles of a woman.* Dominating values in the society with high rate of man's principles are achievements and success, while dominating values of a society with woman's principles prevalence are care of fellow creatures and quality of life.

4) *Avoidance of uncertainty* – extent to what people feel diffidence and uncertainty and try to avoid such situations.

5) *Long-term orientation* is defined as an extent to what society commits to the pragmatic perspective of orientation to future rather than to a traditional historical or short-term evaluation.

DEMOGRAPHIC TRANSITION

Yulia Opanasyuk, Sumy State University, Ukraine

It was been known for a long time that natural resources of the Earth are not eternal and as to the population explosion & constantly growing natural resources requirements they are fraught with grave consequences for the mankind.

The first of the mankind development on condition natural resources limited is found in T.R.Maltus, who (while analyzing increase in populations rates and natural resources usage) has drawn on inevitable economic & demographic crises coming with a future.

The problem was thoroughly analyzed & calculated by "Roman Club" in 70-th. The result of analyses arrived at a conclusion that the 50-th of our century will bring us ecological & economical catastrophe. The only chance to avoid this, by D.M.Medose group, was stabilization the population of the Earth, reduction in using resources per capita, decrease of environmental polluting etc. The theory was called "The Theory of Increase Limits".

At that time the ideas of sustainable development appeared, but its realization was impossible without stabilization of the population.

The situation was changed just for the last decade. When the work of Kapiza was published. The scholar maintains that all previous investigations come from the statement that increasing of population is happening exponentially. But in fact with regard for all factors it is described logarithmically. This theory is called "Demographic transition". Hic est. in the history of mankind will be the period when the population not increases but decreases. The duration of this period is counted by 84 years. The keenest phase has gone & now we expect just decreasing population explosion. And in some decades by the middle of XXI century the population of the Earth will be stabilized at the level of 10 or 12 billions.

Using the rule of sustainable development one could affirm that the population of the Earth will be satisfied with its own resources. The model considered above could propose the common perspective of development, the picture, available for anthro-

logy & demography. It even could show the life script of the population for the late representatives.

ASSESSMENT OF ANTHROPOGENIC IMPACT ON THE BASIS OF CHEMICAL INFORMATION IN THE SNOW LAYER

Prunici Petru, Cantea Vladislav, Romania

Since economic activities, environment quality, and human health are interrelated factors, decisions for area development should take into consideration the information regarding industrial enterprises distribution, residential area locations, and environmental conditions in an area. The assessment of anthropogenic impact on urban landscapes by delineating the influence range of industrial enterprises on residential areas, parks, recreational and other cultural areas, and by establishing the ecological boundaries of industrial centers is a critical issues that needs appropriate solutions. During the cold period of the year, however, this issue can be resolved by means of geochemical analysis of snow layer in a region. Snow has a high capacity of absorption and as a consequence, during showers it accumulates the pollutants from the atmosphere and deposits them on the ground. Even during periods without showers the snow stratum continues to absorb aerosols from the atmosphere. Because of its absorption capacity the snow layer acts as a screen that projects the atmospheric pollution during a period of time.

In order to assess the anthropogenic impact on urban landscapes the concentrations of nutrients (N and P compounds) were analyzed in the snow layer within Chisinau city in Moldova. For this purpose 80 samples of snow were taken and analyzed short after the snowfalls. After 10 days (a period without showers) another 80 samples from the same sampling sites were taken for assessment. The sampling sites were located in different zones of the city such as parks, residential areas, industrial areas, and highways. At the same time, snow samples were taken and analyzed from the "Plaiul Fagului" reservation located 80 km Northwest Chisinau; these samples were taken in order to reflect the baseline pollution.

It was determined that the landscapes within Chisinau area were under a high anthropogenic impact. These landscapes were receiving high concentrations of pollutants from atmosphere; the concentrations of nutrients in urban landscapes (i.e., Chisinau area) were as much as 16 times higher than the concentrations of nutrients in natural landscapes (i.e., the landscapes located in the "Plaiul Fagului" reservation). The annual load of urban landscapes with nutrients through precipitation and aerosols is 14.39 kg/ha of N and 0.32 kg/ha of P. The research results made possible the assessment of the impact of some industrial enterprises on residential areas. Also, the ecological boundaries of Chisinau municipality were delineated by analyzing the concentrations of some pollutants in the snow layer around Chisinau city. The next step of this study would be using geographic information systems (GIS) for geographic reference of the anthropogenic impact by incorporating other complementary data on environmental pollution and population health status in the region.

POPULATION AND THE ENVIRONMENT - HOW MANY IS TOO MANY?

Loza Viktoriya, Sumy State University, Ukraine

In the 20th century, the Earth's human population quadrupled in size from 1.6 billion to 6.1 billion people. At current rates of growth the Earth's population is estimated to reach 9.3 billion people by 2050, and 12 billion people by 2100. At the same time we have seen an increase in the degree to which the physical environment is stressed. The evidence for this is all around us, from air and water pollution, to loss of forests, loss of plant and animal species, global warming, and in some "hot spots" threats of ecological disaster.

There is a direct link between population growth and impact on the environment, but numbers of persons alone do not necessarily spell ecological harm. It is the combination of population growth, economic and industrial development and how persons live and work and use environmental resources they have that determines whether the physical environment is degraded or sustained.

The most affluent 20% of the population who live in the richest countries are responsible for 86% of the money spent on products such as cars, appliances, CD players, computers, or airplane trips. These consumable products, in turn, are dependent at present on production processes and technologies that use materials and energy resources that are non-renewable, such as fossil fuels. Fossil fuels such as oil, gas or coal have effects on the environment such as creating air pollution from emissions, which can harm human health. Burning fossil fuels to heat homes and power automobiles also releases large amounts of carbon dioxide into the atmosphere which in turn contributes to global warming.

Some countries with the lowest per capita income also have the highest population growth rates. Rapidly growing populations in China, India, Pakistan, Bangladesh, Nigeria and Indonesia mean that the increased demand for food, water, housing, energy, and material products pose additional challenges to that country's ability to adequately provide them. Rapid increased demand for these basic life resources also stresses the environment sometimes in much more direct ways than in the wealthiest countries.

So all of these facts beg the question: Accounting for current patterns of human consumption and production, are there going to be too many persons for the size and resources of the planet in the near or distant future? Given what we know about the environment, development, population growth, and biology, why is it so difficult to "slow down" these trends? And finally, we have to decide what can we do to better manage the Earth's ecosystems.

ECOLOGICAL LEASING

Natasha Nikolayenkova, Sumy State University, Ukraine

This investigation is devoted to the problem of searching new financial ways of measures for neutralization of harmful industry influence on environment.

It is well known that many Ukrainian enterprises need in renovation of their fixed funds park. Tear level of which approaches to 80-90%. Obsolete technologies are dangerous not only for staff but for environment too, in other words for all of us.

For some businesses high equipment costs make pollution prevention a challenge. Leasing equipment can be your answer, especially when you discover that implementing waste reduction saves money.

By recycling, use of safer substitutes, closed loop system and more efficient equipment, your business can: reduce waste; increase worker health and safety; increase efficiency.

Leasing is a kind of undertaking activity, which directs to own or borrowing investments; lesser gives to lessee leasing object on the right of exceptionally using on the determining term. Lesser can be the owner of leasing object or he can buy it. Lessee should pay to lesser periodical leasing payments.

Leasing: can protect working capital by providing 100% financing; can preserve your line of credit (lease agreements are generally not regarded as debt liability); can be tax deductible when payments are considered operating expenses; can offer 12-60 month agreements.

One of good examples of ecological leasing was American Department of Ecology Program, which helps to keep water of major Washington rivers in streams for fish migrate during the driest months last summer. The Department of Ecology took water rights in leasing from local farms.

Ukraine takes part in periodical Round Table Meetings: "Ecology: investment—leasing projects in Russia and CIS". Participants analyze ecological industry conditions and elaborate investment—leasing programs for eco—equipment providing. One of such program has been taking place on the enterprise "Zaporogkoks".

New economical conditions demand new financing instruments, which are more effective, more suitable. Leasing can provide our enterprises necessary ecological equipment and help us to decrease harmful industry influence on the environment.

THE LANDSCAPE-ARCHITECTURAL IMPROVEMENT OF INDUSTRIAL TERRITORIES

Marina Rybalko, Sumy State University, Ukraine

The development of different kinds of industry plays a great role in the practice of mankind. The importance of industry in global economy is evident. But plants and factories act very dangerously upon nature. They make the contamination of the environment, including air, water, and land, with undesirable amounts of material or energy. Air pollution of Ukraine is especially severe in many of the heavily industri-

alised cities and towns of southern part of the country, notably in Kharkiv, Luhansk, Donetsk, Dnipropetrovsk, and Zaporizhia. Coal-using industries, such as metallurgical, coke-chemical plants, steel mills, and thermal power plants are major sources of high levels of uncontrolled emissions of sulphur dioxide, dust, unburned hydrocarbons, and other harmful substances. Other Ukrainian cities with critical chronic pollution problems include Kyiv, Komunarsk, Makiivka, and Odessa. The most striking quantities of pollutants are being emitted by enterprises in Mariupol.

People working at these enterprises and inhabitants of nearby houses suffer from the pollution that aggravates their health. Chiefs of the enterprises can save money being wasted for payment of medical expenses with the introduction of nature-protective activities. These activities can hardly be considered to be economically profitable. The most expensive way of the removing of the threat to nature is changing of outdated and harmful technologies, but this method is often as inevitable as using cleaning equipment.

To ensure favourable conditions on the territory of the enterprise the landscape architectural means have to be used. The area must be planted with trees, bushes, grass, and flowers. The influence of plantations upon the microclimate of the territory is great and irreplaceable. They limit extremes in temperature, affect humidity. Calm usually prevails in planted areas with a corresponding lessening of evaporation. Moisture from rainfalls is partly arrested by leaves and branches, while the other part that reaches the ground is stored as in a sponge. The trees, that collect and store up moisture, may also absorb an unwanted surplus. If the territory has local water supplies, plantations are necessary for it to protect them from silting. Trees and bushes absorb and destroy harmful bacteria and reduce the quantities of dangerous chemical substances.

Landscape architecture developed on the base of gardening. It consists of the natural and artificial forms. Natural forms include soil, geological structure, climate, flora, fauna, reservoirs, and relief. Artificial forms, being used in creating of the pleasant conditions of the outdoor area, are: walks and alleys, artificial reservoirs, architectural elements, decorative skill, engineering structures, the technology of construction, agrarian technique.

Some of the principles of the industrial landscape forming are the same as for parks or gardens, but the purposes of these activities differ from each other so one must follow in the destination of the area.

Planting of the enterprises can be divided into two categories: sanitary-protective zones around the whole territory of dangerous plant or factory and the other plantations of the enterprises' outdoor space. The second category consists of different types of planting, which are destined for the comfortable movement on the territory, dinnertime spending, and health protection.

The efficacy of the planting depends on the correct choice of trees and bushes. For example, chestnut, lime tree, fir are the best for the removal of the noise. Such species as lime tree, birch, lilac are very good for the dusty places.

Certainly, a consequence of these activities would be the improvement of human health, an increase in the average expectation of life.

INFLUENCE OF ECO-EFFICIENCY ON THE CONCEPT CLEANER PRODUCTION

Nikolay Kharchenko, Sumy State University, Ukraine

The concept of eco-efficiency was first coined in 1992 by the Business Council for Sustainable Development (BCSD) in its landmark report *Changing Course*. The BCSD has identified success factors for eco-efficiency:

- reduce the material intensity of goods and services;
- reduce the energy intensity of goods and services;
- reduce toxic waste;
- maximise sustainable use of renewable resources and increase material durability;
- increase the service intensity of goods and services.

The concept of Cleaner Production was introduced by UNEP Industry and Environment in 1989. Cleaner production is the continuous application of an integrated preventive environmental strategy applied to processes, products and services to increase eco-efficiency and reduce risks for humans and the environment. It applies to:

- production processes: conserving raw materials and energy eliminating toxic raw materials and reducing the quantity and toxicity of all emissions and wastes;
- products: reducing negative impacts along the life cycle of a product from raw materials extraction to its ultimate disposal;
- services: incorporating environmental into designing and delivering services.

Cleaner production requires changing attitudes responsible environmental management creating conducive national policy environments and evaluating technology options.

Both concepts are integral parts of the macro-vision of Sustainable Production and Consumption, which encompasses the entire economic system and its interrelations.

Eco-efficiency embraces cleaner production concepts such as efficient use of raw materials, pollution prevention, source reduction, waste minimisation, and internal recycling and reuse. It captures the idea of pollution reduction through process change as opposed to the earlier end-of-pipe approaches. It shares characteristics with many environmental management tools such as Environmental Assessment or Design for Environment by including them among the technological options for reducing material and energy intensiveness in production, as well as facilitating reuse through remanufacturing and recycling. Eco-efficiency also features a life cycle perspective, which follows products from the raw material through to final disposal stages.

PROBLEMS OF ECOLOGICAL EDUCATION

Yulia Skribuk, Yanka Kupala State University of Grodno, Belarus

"Change yourself and the world will change"

Ecological problems solution is closely connected with the changing of human conscience. In our society ecological crisis is represented as something external to human beings. But efficiency of any actions depends on people's behavior and their attitude towards nature.

Structure of ecological conscious includes

- Knowledge about nature and human-nature interaction;
- Emotional attitude to nature;
- Strategy of interaction with nature (Deriabo S, Yasvin V., 1995).

The dominating anthropocentric type of thinking determines consumer's attitude and perception of nature as an object. Pragmatic goals and motives penetrate any human-nature interaction. Even biological, geographical and ecological syllabuses at secondary school are impregnated by the idea of "profitable" nature (bad or useful bugs, importance of forests for national economy, useful minerals etc). Therefore ecological crisis is first of all "crisis in heads".

Ecological consciousness is an alternative to dominating thinking. Ecological conscience comprises perception of nature as a subject, absence of opposition between human being and nature, balance of pragmatic and no pragmatic goals of interaction.

Human being must refuse the conception of his superiority over nature. But an anthropocentric type of thinking is very settled. According to some surveys about 90% of people skip any information about ecological problems, because such information breaks their "safe image of the word". Usually people worried with ecological problems, closely connected with their vital activities and comfort (water pollution, air pollution).

Politics, economy, TV and especially education are important in the formation of the ecological consciousness. Nowadays education provides knowledge, which develop cognitive sphere of consciousness and ignore emotional and personal spheres. Therefore training forms of work are necessary in the youth ecological education.

Psychological principles of ecological consciousness formation:

- reflection – extension of knowledge about nature, imagination how animals see us, answer to the question "What nature means for me";
- empathy – sympathy towards nature, animals, birds;
- identification with animals, plants;
- activity – participation in ecological actions;
- psychological games, modelling of different ecological situations (games "Karl Linneys descendants" (Yasvin V., 1998), "Advocate of animals", "The blind").

CITY COUNCIL ENVIRONMENT COMMITTEE ACTIVITIES AND MANAGEMENT

Asunakutlu Tuncer, Mugla Univirsity, Turkey

City Council Environment Committee is a civil foundation carrying out activities in Mugla City which holds a great importance in terms of Turkish tourism. Drawing public interest by developing new projects and ideas that contribute to the protection and improvement of the environment and providing consultancy service to local government offices are among the aims of the foundation.

Aim and Activities

The foundation aims to help form an ecologically habitable city and to work on environmental improvement models that are economically feasible. In order to serve this aim, the foundation organises activities and develop partnerships to create public interest and sensitivity towards environmental issues. Among these activities are:

- Environment protection activities
- Environment improvement activities
- Activities towards establishing awareness of environmental issues.
- Encouraging sensitivity about clean environment and provide civil efforts by concrete projects contributing to clean environment
- Developing and implementing projects on aesthetic landscaping
- Organising social activities to raise awareness of environmental issues

Economical and Ecological Contributions

Through all these activities, the foundation has been trying to raise and develop environment awareness among the city dwellers and especially among the members of future generation.

The Recycle Project (YEKAP), developed by the municipality, has been supported by the public and considerable developments have been made in recycling hard wastage to produce economic value.

Objectives

- To form an habitable city and environment
- To take measures to protect the ecological balance
- To contribute to maintaining the economic growth
- To implement environmental projects with the support of sponsors

Active Participators and Management

Active participators include academics, members of private enterprises, students, municipal managers, managers in public and private organisations, and members of the media.

Management of the organisation requires participation and cooperation. It has a horizontal organisation chart and participators with different tasks according to their specialities are in close cooperation. Although coming from different social and economic backgrounds they are encouraged to work in harmony. Top management

coordinates the sub-committees. Technical affairs are organised by a secretarial bureau which reports to the general board of the Town Council.

ECOLOGICAL TERRORISM AND ITS THREATS TO EUROPEAN SECURITY

*Oleksiy Poltorakov,
National Institute of International Security Problems, Ukraine*

1. Our challenge for this new century is to start addressing future security problems with today's way of thinking and today's institutions, because those are what we now possess: this is called "cultural lag". Every generation experiences it: we always face the future with a set of instruments and ways of thinking which are not necessarily the ones that, ideally, we would choose, especially with hindsight. Four things are new: the timing; the range of the security problems that we are now going to have to engage; the institutional demands that those two first requirements will set; and finally, the analytic requirement that must underlie any sort of robust institutional transformation.
2. The end of the Cold War radically transformed the security environment of the Euro-Atlantic region. Fears of a major military confrontation have receded; the salience of nuclear weapons and the logic of deterrence have diminished; ideological confrontation between liberal democracy and communism has almost completely evaporated; and the rigid division between East and West has been replaced by a drive to integrate the Euro-Atlantic region.
3. However, the Euro-Atlantic region still faces significant security challenges. Indeed, some even argue that the period of the Cold War should be considered a time of stability and that the future will be characterised by increasing tensions and conflicts. Whether this is correct or not, the post-Cold War security challenges tend to have more diverse origins and involve disparate actors and processes. These include such issues as fears of state disintegration and internal conflict; ecological degradation; refugee flows; the unpredictable effects of globalisation; transnational organised crime; violations of humanitarian laws; and illegal technology and arms transfers.
4. Whether extending security to include all these issues is desirable is itself a significant source of controversy. Some argue that this makes security too 'vague' and 'indeterminate'; others argue that such issues can be considered as security issues if their resolution is likely to have military consequences or involve the use of force; yet others argue that our notions of security must be extended further and be detached from military and defence concerns. The relative merits of these differing approaches to the study of security will be examined.
5. Besides the military and political dimension European security has many other not less important aspects. Among them I would name first of all the ecological aspects. The price of ecological security is well known to Europeans: Ukraine and Belarus suffered more than others from the Chernobyl disaster. Such calam-

ity knows no state borders. For example it was not Belarus who built the Chernobyl nuclear power plant and the latter is not located on its territory, but the bulk of the fallout is on their land. This well-known example shows the importance of ecological security, but makes us being afraid of such evidences organised intentionally, as we know that many European states has nuclear plants. So the ecological terrorism is a serious risk to European security.

The Federal Bureau of Investigation (FBI) defines terrorism as "the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives" (See "Terrorism in the United States: 1990," published by the FBI's Terrorist Research and Analytical Centre, Counterterrorism Section, Criminal Investigative Division). This report considers a wider range of activities than is covered by either the Act or FBI's definition of terrorism. It takes as its focus of analysis the more inclusive issue of ecology extremism, which includes actual or attempted actions of theft, vandalism, violence, disruption, or destruction. In all, this study identified 16 categories of ecology extremist activities.

The Parliamentary Assembly of Belarus and Russia has decided to organise under its auspices on 24-26 May 1999 the International Parliamentary Conference "Undivided Europe Is Our Common Home". The participants of the Conference will address issues, highly relevant for the residents of all European countries. The special attention was paid to the European ecological security including its radiation and chemical components: 'Densely populated industrial Europe has developed a priority for the issue of environment protection, which is vital for sustainable development of the continent. The framework of the conference will allow its participants to touch upon different problems of environmental protection they deem important. However the organisers of the forum expect the conference to focus primarily on the threat of technology generated catastrophes effecting in radiation and chemical contamination of vast territories of modern Europe and carrying danger not only to the living generation, but the generations to come. This adds relevance to the choice of the host city for the conference. The choice meaningfully went to Minsk, the capital of Belarus. Belarussian people more than any other nation in Europe have suffered from the most terrible technology generated catastrophe in the mankind's history, the catastrophe at the Chernobyl Nuclear Power Station. The organisers of the conference think that the issue of elimination of chemical weapons buried in the straits of Skagerrak and Kattegat after the second world war and accumulated in the post war period should be also intently considered.'

In February 8, 2001 the RF President V.Putin said in a interview with an Austrian newspaper before his Vienna trip that the main threats to European security "lie in the non-military sphere," including the proliferation of weapons of mass destruction and international terrorism. The President told Neue Kronen Zeitung that he saw "the real threats" for Europe in "the proliferation of weapons of mass destruction, international terrorism, aggressive separatism, organised crimes,

drug trafficking and ecological disasters, which might seriously upset strategic stability as a whole."

9. Since the occurrence of the tragic events of September 11, 2001 at the WTC and the Pentagon, there has been considerable concern among the public regarding the ability of nuclear power plants (and other nuclear installations) to withstand direct attack (whether from terrorists or nations - see the information on the attacks on the Iraq NPP) with for instance a passenger jet with full fuel tanks by other means.
10. To sum it up, I would like to stress, that humans are experiencing their religious spaces enclosed when militaries occupy sacred lands as in the Mid East. Humans are experiencing enclosure through occupation as in Palestine. The children in affluent America are also experiencing a closing of their lives, and are turning to mindless violence as in the case of shooting at St. Columbine. And across the world, ecological, economic and political spaces are being enclosed through privatisation, liberalisation and globalisation. These multiple processes are breeding new insecurities, new anxieties, and new stresses. As a result, cultural security, economic security, ecological security, political security are all being rapidly eroded in Europe in particular. While the new international security configuration will not replace traditional ones, it will no longer be possible to promote international peace and stability without taking account of these new risks.

THE ISSUES OF DRINKING WATER QUALITY

Olena Kovalyuk

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The issues related to the environment protection and rational use of water resources is prioritative in economic and social development.

Watersupply requirement sanitary norms and improvement environmental health is of vital value for environmental protection, the improvements of health of the population and struggle with poverty. According to estimations, about 80 percents of all diseases and over one third of deaths in less developed countries are caused by consumption of the polluted water, and on the average almost one tenth part of useful time of each man is spent on treatment of diseases, transmitted through water.

Freshwater resources scarcity and increase of new resources development can exert essential influence on development of a national industry, agriculture, populated areas and economy. More rational using of urban water resources, including removal of the unstable tendencies of consumption, can appreciably facilitate struggle with poverty and improvement the condition in the field of health protection and quality of life of the population.

MUNICIPAL SOLID WASTE MANAGEMENT IN PHILADELPHIA

Arthur Holst,

Public Affairs Division of City of Philadelphia, USA

The City of Philadelphia has a population of close to 1.5 million (1995 census) and comprises 129 square miles. Municipal trash and recycling collections are provided to City-owned facilities, small commercial generators, and the most importantly, all residential buildings with five units or less. The City collects trash and recyclables from approximately 530,000 households located in Philadelphia.

Recycling program involves several recycling activities:

Curbside Collection

Philadelphia was one of the nation's largest cities to pass a recycling law in Philadelphia in June 1987. The law set a goal of recycling 25 percent of the solid waste stream by 1997, and 35 percent by 2003.

To minimize contamination, and to educate the public at the same time they were further instructed to leave "Sorry! Wrong Stuff" tags on containers with unacceptable items in them.

Partnership Recycling

Recycling programs operated by community groups have progressed far beyond the paper drives of old. At this high point literally hundreds of drop-off sites were firmly established throughout the city.

Leaf Collection

In the fall of each year, the city provides leaf collection to those areas of the City that have the most trees. Approximately 4000 to 5000 tons of leaves are collected and then composted at the Fairmount Park Composting Facility. The compost is made available to City residents and community garden groups.

The City also recycles residents' live Christmas trees for a two week period following the Christmas Holiday.

SWEEP (Streets and Walkways Education and Enforcement Program) is the education and enforcement arm of the Streets Department and is responsible for educating citizens about, and enforcement of recycling, trash, and littering provisions of the City Code. SWEEP officers have the authority to inspect buildings and set out locations for compliance with the Commercial Regulations and watch for non-compliance at the regulated premises.

As a result of the City's efforts, the amount of commercial tonnage reported has increased each year and has assisted the Streets Department in maximizing the amount of grant money they receive each year from the State for recycling activities such as:

- municipal building recycling program;
- backyard composting program;
- tire round-up program;
- educational programs.

In 1998, the Recycling Office debuted its new mascot named "Curby Bucket". Since that time, Curby Bucket has made hundreds of appearances at different venues, reminding the citizens of Philadelphia to recycle and the value of a healthy environment. The Recycling Office also goes out into communities, offices, schools to promote and explain Philadelphia's Recycling Program. The Recycling Office has also provided education by advertising in newspapers, movie theaters, buses, subway cars and on train platforms, in addition to presentations and lectures used throughout our educational outreach efforts.

NATURE PROTECTING ACTIVITY AS A COMPONENT OF INDUSTRIAL AND ECONOMIC ACTIVITY OF INDUSTRIAL ENTERPRISES.

Irina Deineka, Sumy State University, Ukraine

Nature protecting activity is any activity directed on preserving the quality of the environment on the level providing biosphere sustainability. It includes both large-scale activity on a state level for wildlife and bio-diversity preservation, research activity support, educating environment specialists and individual enterprises activities on purification of waste waters and gases, decreasing the norms of nature resources use.

There are two main directions of nature protecting activity. First is wastes purification. This way in pure form is not very effective, because it seldom possible to totally prevent pollutions from coming to biosphere. Moreover, decrease of one kind of pollution level leads to increase of other kind of pollution. For achieving high ecological-economic results it is necessary to combine the waste purification process with the process of utilizing of trapped substances, which could make possible to combine two directions. The second direction is removing the reasons of pollution that requires development of the low-waste and in perspective nonwaste technologies promoting complex use of resources and utilize most of dangerous for biosphere substances.

The environment protection consists of:

- law protection, forming scientific ecological principles in the form of legal laws, obligatory for fulfillment;
- material stimulation of nature protecting activity, aiming to make it economically profitable for enterprises;
- engineering protection, designing nature-protecting and resource-saving technology and techniques.

Engineering-ecological examination as an overall assessment of industry enterprise influence on nature environment, allows to reveal the most likely consequences of building, functioning and extending of enterprise comparing with required quality of environment.

One of the attempts of state regulations of nature protecting activity is all-Union State Standard 17.0.0.04-90, of the 30th of January, 1990, "Ecological passport of

industrial enterprise. Main statements", that includes data about nature and recycled resources used by the enterprise and the influence of the enterprise on the environment.

Acting in present time economical mechanism of nature management on industrial enterprises does not provide the accumulation of finances for plain and extended reproduction of nature protecting capital assets.

ECONOMIC ISSUES OF ENVIRONMENTAL STANDARDISATION

Anastasiya Timoshina, National University of "Kiev-Mohyla Academy", Ukraine

Norms and requirements of modern economics is now the only main instrument in relationships between countries. They are the source of sharpening in the fight for the markets of selling and production, environmental barriers for measuring the import into the country of various kinds of industrial and agricultural production. And in Ukraine there appeared a very difficult environmental situation because of a lot of social and economic reasons.

According to the experience of the developed countries of the world, it is really difficult to implement the environmental policy inside the country even for those, who have the prospering economy. The more difficult seemed to be the environmental situation in Ukraine that lives through the deep economical crises. Nevertheless, the ecological reform in Ukraine has started soon after the declaration of independence. In the basis of the state environmental policy of Ukraine lays the basic principle, according to which the ecological safety of the state becomes the important part and the compound of the national safety.

Speaking about the environmental modernization of the manufacture, environmental policy of the enterprise, the standards ISO 14000 are considered as one of the sources of the radical changes in this sphere (whenever not the only one). The aim was to prepare Ukrainian enterprises to the severe rules of the world trade. The presence of a certificate system of management could become the initial part of the demands of strategic partners of Ukraine for buying Ukrainian goods. The National Committee of Standardisation of Ukraine (being the first among all the countries of the CIS) has worked out for the direct introduction the international standards ISO 14001, 14004, 14010, 14011, 14012, which has received the status of voluntary in the second half of 1997.

This year the first enterprise was certified according the ISO 14001 in Ukraine – Joint-Stock Company "Stirol" (Gorlivka). We can speak of these standards as a real source of changes, so what are the main obstacles of implementing the EMS and peculiarities of the inner administration in our enterprises:

- first of all, speaking of ISO 14000 we should always remember of the ISO 9000 (standards of quality). Most of our enterprises are building their development policy in a way of firstly receiving the standard of quality and later EMS. Actually, it is rather reasonable, because in most of cases increasing the quality will demand

changes in the production cycles and so in the control of emissions and pollution. So, ISO 9000 could be viewed as the first step to the environmental management;

- the practice shows that our laws, orders, decrees are the strong limiting factor for any voluntarism in the sphere of the environmental policy of enterprises. Here we again come back to the traditional understanding of the management in our country – system of orders and strong control from the side of the government.

Whenever, the fact of implementing of the ISO 14000 in Ukraine is the vivid tribute of our desire to get to the list of the developed (I'd even say advanced) countries. Guess it is high time to develop the practical part. Having the positive experience we can hope for the development of the SEM, trying not to forget the main aim – whenever it may sound too banal – the sustainable development - building and development of enterprises in such a way not to harm the environment nowadays and, besides, to keep the worthy conditions for the existence of the future generations.

ACID RAINS

Kateryna Levina, Youth organisation "ENERGY", Ukraine

By the Term "the acid rains" we call all kinds of meteorological precipitation - rain, snow, hailstones, mist, rain and snow, - pH of which is less, than average value pH of rainwater (selected during pH of rainwater equals 5.6). Sulphur dioxide (SO₂) and the nitric oxides (NO_x) human activity are transformed in atmosphere in acid fragments.

These fragments react with water transforming it in solutions of acids, which lower pH of rainwater. For the first time term "acid rain" was entered in 1872 by the English explorer Angus Smith. The Victorian smog in Manchester attracted his attention. And though the scientists of that time denied the theory about existence of acid rains. Today noone doubts that the lead-acid rains are one of reasons of loss of life in pools, forests, crops, and vegetation. Besides the lead-acid rains shatter buildings and monuments of culture, pipe lines and cars, they also lower fertility of soils and can result in to infiltration of toxiferous metals in ground water wells of soil.

The acid rain is generated as a result of reacting between water and such pollutants, as oxide of sulfur (SO₂) and different oxides of nitrogen (NO_x). These matters are rejected in atmosphere by motor transport, as a result of activity of metallurgical firms and electricity generating plants, and also at incineration of coal and timber. Reacting with water of atmosphere, they are transformed into solutions of acids - chamois, sulphurous, nitrous and nitrogen. Then, together with snow or rain, they settle out on ground.

The acid rain renders negative effect on pools - lake, rivers, embayments, ponds - increasing their acidity up to such level, that the flora and fauna perishes there. The water plants best grow in water with pH values between 7 and 9.2. With the acidity increasing the water plants start to perish depriving other animal of nutrition. At an

pH6 acidity the freshwater shrimps die. When the acidity is increased up to pH3.3 the base bacteria which decompose organic matters perish and the organic waste starts to accumulate at the bottom. Then the plankton, which is the basis of a food chain of a pool, perishes because it feeds on matters which are generated at disintegrating by bacteria of organic matters. When the acidity value reaches pH 4.5 all fish, majority of bellows and insects die.

In process of accumulating of organic matters at the bottom of pools toxiferous metals start to leach from them. The hyperoxemia of water promotes higher dis-solubility of such dangerous metals as aluminum, cadmium, mercury and lead from bottom sediments and soils.

These toxiferous metals introduce a health hazard to man. The people drinking water high in of leads or eating a fish high in of mercury, can gain severe diseases.

The acid rain harms not only aquatic flora and fauna. It also defoliates overland. Nowadays scientists consider, that even though the gear is not studied up to the end yet, "a complex mixture of pollutants including lead-acid precipitation, ozone, and heavy metals results in a degradation of forests.

Annually the economical losses from acid rains on the eastern coast of the USA are about 13 million dollars and by the next hundred years the average general costs will reach the value of 1.750 billion dollars from loss of forests and 8300 billion dollars from loss of crops (only in basin of the river of Ohio) and only in the state of Minnesota about 40 million dollars on the medical treatment expenses.

ENVIRONMENTAL PROBLEM: GREENHOUSE GASES

Kholoshenko E.L., Ukraine

Ten years ago, many developing countries felt they had to postpone dealing with environmental protection in order to focus on economic and social development. Today it seems that many industrialized countries are adopting the "wait" attitude that had previously been so prevalent among countries.

The present situation requires working out a comprehensive program to prevent pollution and protect the environment. More and more hazardous chemicals are used extensively in agriculture. The world's tropical forests are being destroyed at a rapid rate, which can contribute to the build up of greenhouse gas in the air. There is a worldwide increase in the amount of waste; many species of plants and animals are disappearing rapidly. Litter (food and garbage) bring animals which sometimes carry disease. This can lead to considerable pressures on the environment.

Economy and ecology are not only closely linked but actually interact and reinforce each other by means of a price system. It is widely recognized that one can always get around a regulation, but prices are impossible to dodge. In other words, through the price system, *Homo economicus* may become *Homo ecologicus*, provided the prices reflect the actual scarcity of environmental resources and the environmental consequences of production and consumption patterns adopted by society.

Of course, prices do not currently reflect environmental factors, though there has been some progress in this direction. In the future, however, economic incentives provided through the price system will become the simplest means of conciliating the economy and the environment, while providing individual localities, countries and regions with decentralized control over their fates.

A problem that might be tackled through economic incentive is global warming. In both the international and national forums, there is a tendency to do little, since appropriate responsibility and burdens are difficult to establish and to distribute. This noncooperative attitude will be difficult to change in any given nation as well as worldwide by means of political agreements.

When responsibilities are difficult to establish among numerous actors, a comprehensive set of economic incentives can achieve important results. External costs arising from global warming are difficult to assess with precision, especially in monetary terms. But gradually introduced taxes aimed at tackling greenhouse gases that are the cause of global warming could partially internalize those costs and provide an incentive for less energy-intensive growth. Despite uncertainties about the true costs of global warming, this approach should be effective. After all, energy efficiency is the kind of no-regret strategy that brings benefits without diminishing social welfare.

In the long run, such actions through the price system will lead to major structural shifts while avoiding short-term shocks. In any case, this approach seems much more efficient than allowing local, regional, national and international quotas that might be set forth in an international agreement. Economic development, market principles and environmental protection can be in harmony, providing a sound heritage for generation to come.

ENVIRONMENT-CONSCIOUS ACTION: BUSINESS-CONSUMERS LINKS

Nataliya Vakulishyna, Sumy State University, Ukraine

It is said that we drastically overhaul our social mechanism if we are to build a society that puts less pressure on our environment. Which part of society one should address? One of the keys to that question may be found in the relationship between businesses and consumers.

There are diverse perspectives through which businesses perceive environmental problems as issues concerning themselves. Companies may see a new market emerging as a result of the proliferation of environmental problems. On the other hand, they may realize that a failure to deal with local pollution problems or sales of products damaging to the environment may accompany the risk of hurting their corporate image. On a longer term, environmental problems could restrict the availability of resources from around the world, or enhance the need to respond to regulations and incentive measures at home and abroad. In the prevailing trend of eco-

industrialism, business may be called on not only to tailor their products and services to more environment-friendly ones but also to transform their own identity in society. On the other hand, however, enterprises can not forego job security and pursuit of profits in the present industrial society.

Individuals, as an opposite party to business, also have many faces. The individual may exist as someone who takes advantage of hi/her immediate environment, as a parent concerned about the environment for the coming generations, as a person that casts direct impact, both favourable and unfavourable, on the environment, or as someone who puts his/her message across to the community, business and the government. In turn, the individual may become involved in environmental problems as a member of a business entity.

The individual's ties with business is often strongest as a consumer. In recent years, there are moves among consumers to take the initiative in turning the market into a more environment-conscious one. The relationship between the individual and business can no longer be confined to the exchange of goods and services: the two are interconnected via diverse channels, for instance by exchange of information through media reporting and corporate image advertisements. Are these channels functioning well toward the resolution of environmental problems? We can not give a positive answer because along with a strong consumers awareness on the environment which has established itself deeply since the Earth Summit in 1992 communication between business and consumers has not always been adequate. To link consumers and companies closer, governmental action is needed in setting up a social system based on the disclosure of corporate information on the environment.

CONSERVATION AND RESTORATION OF WESTERN HIMALAYAN FISH COMMUNITIES

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Being one of the world's mega diversity zones, India is considerably rich in biological diversity. Biodiversity in the lotic environments is being lost even faster than in the terrestrial environment. The fact that the aquatic environments are recipients of virtually every kind of human waste, has led to their rapid and continuous degradation.

Considering the ever increasing anthropogenic pressures, the Western Himalayan hillstreams were investigated for the status of the fish communities. A total of 48 streams were sampled from August 1998 to October 2000. According to the IUCN criteria (CAMP, 1997) out of 41 fish species recorded from the 48 streams of Himachal Pradesh and Garhwal region, two species are critically endangered, four are endangered, eleven are vulnerable and fourteen are near threatened status.

The presence of the exotic fishes namely *Cyprinus carpio communis*, *Salmo trutta fario* and *Onchorhynchus mykiss* in five streams are not viewed positively as these have led to the decline of the native fishes. Our observations and the earlier

have indicated that the most important causes for the depletion of fish species are loss of habitat, channelization or diversion of water, hydroelectric projects/dams, sedimentation, destructive fishing methods and pollution.

Considering the fact that 75% of the fish species are critically endangered to near threatened status invokes urgent conservation measures.

One of the positive outcomes of the studies was that all across Western Himalayas, there are religious places (like Macchayal, Rewalsar, Renuka etc.) having natural water bodies, which support a rich fish fauna/diversity. Even the endangered fishes like *Tor putitora* were observed in significant proportion in these water bodies. The local people act as custodians for these water bodies and these in fact are serving a natural abode for many of the hillstream fishes. However, these water bodies receive high organic load due to the putting of all kinds of food for fish besides the problem of inbreeding as a few abnormal specimens were observed in certain water bodies.

The state governments, NGOs and other institutions working towards a conservation and restoration of fish communities by doing little can convert these places into "Fish Sanctuaries" by educating the people against the high organic load, an efficient flow-through system and the genetic improvement of the stocks by interchanging with the wild stocks. This would certainly go a long way in preserving the fish stocks. These fish sanctuaries would involve little economically.

The paper also advocates the use of hatcheries and other means for the augmentation and improvement of the native fish stocks.

ECOMARKETING APPROPRIATION AT THE JSC "SUMYKHIMPROM"

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Open Joint-stock company "Sumykhimprom" operates the work after appropriation of new assortment and producing the new kinds of production, following the problems of ecology, energy and recourse saving.

The foreign countries are huge & perspective sale market of many products producing at OJSC. But very often exporter meets with definite impediments at the external market such as regulation impediments in the form of decisions & directions of importer-country concerning the quality, design, ecological safety norms connected with national technical standards.

Nowadays extremely allowed throws exploitation system & their observation control system act at the enterprise as well as in the whole Ukraine. And requirements & export product quality standards became harder.

The appearance of the international standards series of ecological management systems at enterprises & companies ISO 14000 & EMAS are called one of the most important international nature saving initiatives. These quality standards are directed first of all towards standardization of harmful substances concentration in the envi-

ronment. They also demonstrate the conformity of the ecological marketing & management system to modern requirements.

So after conducted activity analysis of OJSC & the project of instilling the international quality standards in Ukraine it is necessary to add the following proposal to the economical situation improvement of the company: to pay more attention to the ecological & international marketing development; external market sale stimulation methods must be used only after their exact marketing research; gradually instill international quality standards ISO 14000 & EMAS, the first, for equalizing the chances with developed country competitors, the second, for improving environmental condition in Ukraine.

ECOLOGICAL METHODS OF THE WATER QUALITY MANAGEMENT

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One of the most important questions people worry about in the water management is the water quality problem. A lot of methods and means were elaborated and created for the quality assessment of the drinking, technical and other water types. Usually the new approaches development is based on the technique innovations, so the different instruments are used now for the qualitative and quantitative valuation of the man-induced influence to the natural water bodies. Such branch of the water environment quality studying as bioindication plays a significant role in the contemporary ecological researches.

The bioindication method allows to characterize the quality of the water environment by its parameters relatively to the standard characteristics of the different water types. Aboriginal animals adapted to the given water from the concrete water body are used as indicators of the various deteriorations of their habitats. Different animals have not the same sensitiveness to specific pollution of the water environment. Following in the nature footsteps expresses itself in the fact that the speed of proceeding the processes in the organism, physiological functions and behavior reactions change. Traditionally five groups of organisms were studied as the water quality indicators - bacteria, fishes, plankton, periphyton and benthic invertebrates. Bacteria are the indicators of the fecal deterioration and the pathogenic organisms existence in the water body. The water quality can be traced on the fishes using the biological indices like fertility, alterations in the shoot, survival rate, activity of different enzymes etc. Plankton and periphyton show the level of the nutrients saturation of the water. The benthic invertebrates are the best indicators of the water environment, because they strictly register to the place where they can be found. In particular, the different species of the crayfishes have the high sensitiveness to the environment pollution and quickly react to the water quality changes.

Crayfishes are known as the indicators of the high water quality for a long time, so they are the most popular objects of the ecological physiology and water toxicol-

Useful links for research and education in economics and environmental science

Working paper series:

- <http://www.nber.org> (National Bureau of Economic Research, a huge collection of working papers in economics as well as in environmental economics).
- <http://hsb.baylor.edu/html/gardner/WP.HTM> (Garner Collection, A thorough archive of working papers)

Economic and environmental economics education:

- <http://rfe.org/> (Resources for Economists on the Internet, A strong database of internet resources in economics. The database covers data sets, economic organisations, economists, Universities, academic advises, grants, teaching resources).
- <http://www.economics.ltsn.ac.uk/> *The Economics Centre of the Learning and Teaching Support Network* (A very useful site for economics education and research. Consists a lot of links concerning economics teaching (problem sets, on line lecture notes, power point presentations, software guidelance) as well as research (on-line journals, working papers, data sets). Site also covers experimental sides such as internet economics).
- <http://www.sims.berkeley.edu/~hal/> (Hal R. Varian's homepage; A well done site of a prominent economists Hal Varian contains various on-line publications for economic research also it covers a brand new sphere of economic investigations – the information economy (the economics of the Internet, information goods, intellectual property and related issues)

Research grants:

- <http://www.eerc.ru> (Scholarships for research in the field of economics, environmental science. Eligibility: participants from FSU countries)
- <http://www.osi.hu> (Open Society Institute, institution which provides scholarships in humanities, faculty training programs such as Summer Schools etc. Individuals are encouraged to compete for research as well as education grants. Eligibility: NIS participants).

Education and faculty development programs:

- <http://www.ceu.hu> (Central European University. Central European University provides full scholarships for education in humanities: PHD, MA, MSc. Outreach programs are also available)
- <http://www.nes.ru/russian/index.htm> (MA program in economics, Russia. Eligibility – individuals from FSU countries)
- <http://www.cerge-ei.cz/> (PHD program in economics, scholarships are available on highly competitive basis)
- <http://www.eerc.kiev.ua>. (MA program in economics; eligibility – individuals from Ukraine and Belorussia)
- <http://www.britishcouncil.org> (A organization which provides information about full scholarships for study in the field of environmental economics/policy. Scholarships are highly competitive).
- <http://exchanges.state.gov/> (The site consists of information about undergraduate and graduate study in North America)
- <http://www.scholarshipexperts.com/> (The link tells for itself)
- www.osvita.org (A wonderful link! The site covers information about scholarships for postgraduate education. The site is oriented at Ukrainian individuals)
- www.british-education.co.uk (Education in Great Britain).

Матеріали

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